

Hurry up and

Whether it's a two-page letter or a 100-page report, the whole point of writing is to get to the



point. And nothing gets you there faster than Microsoft® Word, Version 3.

Moving an outline heading moves its associated text. So you can not only organize your thoughts, you can quickly rearrange your words, too.

That's because Word is not your ordinary word processor. In fact, it's not a word processor at all.

Word is the Macintosh™'s first document processor.

And it's specifically designed to take you from outline to output, without getting you bogged down in details.

That's why you'll find a combination of powerful features in

Word you won't find anywhere else.

Like an integrated outliner for organizing your thoughts. And for rearranging pages of paragraphs with a simple click of the mouse.

Likewise, a simple mouse click is all you need to check and correct your spelling, using Word's built-in, customizable 80,000word dictionary.

Plus you can preview and adjust page layouts before you print. Customize menus, so the files, fonts and formats you need are always at hand. Even assign Word the time-consuming chore of generating a complete index and table of contents.

All critical, professional features that strip hours off the task of turning rough thoughts into crisp, persuasive documents.



get to the point.

Rut the real nower

But the real power of Microsoft Word comes from the major time-saving features available while you input, edit and format your work.

Advanced features, like comnand and accelerator keys, that

a single age group with 12.7 percent. The combined age group of 25-54 accounted for the greatest concentration of total bicycle sales with 55-4 percent. Relative to population in each age group, sales indicate that there is above average interest in bicycle products in the 15-44 age categories. Sales are relatively lower, at 27.6 percent, for the younger segment (age 15-24); this is significant given the fact that the salmost half that of the 25-49 segment. The discrepancy between the information from Lake City's warranty registrations and the total bid the following:



Vith style sheets, you can change from one format another with just a click of the mouse.

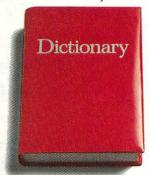
duplicate every mouse function while you keep your hands on the keyboard. Glossaries, for recalling frequently used text with few rapid keystrokes. Style

sheets, for saving and reusing type styles and formats with a simple point and click.

And obvious, but often overlooked time-savers, like

the ability to select words, sentences or whole paragraphs at the touch of a button.

What can
Word do for you?
The answer can



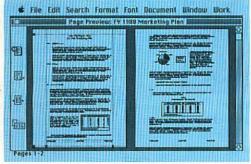
What's the difference between Word's built-in spelling corrector and a secretary with a dictionary? How about a couple of hours.

be found at your local Microsoft dealer. For the address of one near you call (800) 541-1261, Dept. A76.

Ask him to help you put Word

to work in preparing your most complicated documents.

And in no time at all you'll reach



Page preview saves you endless trips to the printer because you can revise page breaks and margins before you print.

your own conclusions.

Microsoft. Word

Microsoft is a registered trademark of Microsoft Corporation.

Macintosh is a trademark of Apple Computer, Inc.

MACWORLD

December 1987

The Macintosh™ Magazine



Departments

- 11 Mac Bulletin
 Late-breaking news.
- 17 David Bunnell
- 27 Letters
- 39 Commentary/Jerry Borrell
- 47 Contributors Notes
- 53 Steven Levy
- 159 New Products

A quick look at new Mac software, hardware, and accessories.

171 How To/Getting Started with PostScript
An inside look at the language that
drives the LaserWriter.

191 How To/Business Clinic

Let *HyperCard* take charge of your To Do list.

209 How To/Quick Tips

Quicker closing in *Excel*, quicker startup with the LaserWriter, new symbols on the SE keyboard, and more.

219 How To/Insights on SuperPaint

Tips to make the most of *SuperPaint*'s two layers of graphics.

235 How To/Mac System Tools

Ten steps to more memory: installing SIMMs in a Mac II.





On the Cover

Fly-by-night retailers, mail fraud schemes, and credit card criminals are giving computer mail order a bad name. See page 82 for a special report on this troubled industry.

67 Macworld News

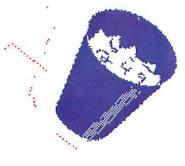
- 1200 DPI on Paper Varityper and Printware take the next step in laser printing.
- Videodisk Played by HyperCard HyperCard control makes videodisk programs interactive.
- Coaching Writers Via Modem
 An innovative teaching program makes use of remote experts.

Plus, a much easier way to use Compu-Serve, a new program that writes powerful macros, a desktop newspaper, and more.









Features

82 What's Wrong with Mail Order?

Bad management and outright fraud are putting consumers on the defensive.

90 Looking through the Mac II Kaleidoscope

Color monitors compared.

96 Macintosh-Aided Design

The promise and problems of the Mac as an engineering workstation.

104 The Disk Shopper's Guide to Storage

What to look for when buying a hard disk, plus feature comparisons for over 200 drives.

118 The Game Hall of Fame Annex

Which are the best Mac games? Announcing this year's personal picks from our eminent panel of one.

124 Inside Outliners

المسائلة المالية

The I, II, IIIs of Mac outline programs—a buyer's guide.

Reviews

136 Hello, PhoneNet Calling

PhoneNet System network wiring system and diagnostic software.

138 A (Re)Touch of Gray

ImageStudio gray-scale editor.

139 Desktop Publishing the Hard Way MacPublisher III.

141 Vocab Rehab

Smart Words vocabulary tutor.

142 How Not to Meet Women

Leisure Suit Larry in the Land of the Lounge Lizards adult game.

142 Pace Yourself

Personal Training Systems.

144 The Finder in a Desk Accessory

DiskTools II Finder alternative.

145 Expanding Your Network

MultiTalk MT-100 and NetModem V1200 network modems.

146 Working Software Opens Up

Findswell, LookUp, and Spellswell personal productivity helpers.

148 The Musical Tutor

Listen ear-training drills.

149 Courseware Construction Set

Course Builder authoring language.

150 More on Hand

PowerStation and Suitcase Finder alternative and DA organizer.

151 Mail Merging Power for MacWrite

MergeWrite.

152 An Environmental Choice

TML Modula-2 for MPW compiler.



MACWORLD

David Bunnell

Editor-in-Chief

Jacqueline Poitier

Director/Art and Design

Jerry Borrell

Editor

Christopher Burg

Art Director

Editorial

Managing Editor: Charles Barrett Senior Associate Editor: Adrian Mello (Features)

Senior Technical Editor: David Ushijima Associate Editors: Gil Davis (News), Nancy E. Dunn (Departments), Janet McCandless (Reviews), Brita Meng (East Coast Editor)

Editorial Manager: Jane Lagas Assistant Editors: Eileen Drapiza (New Products), Valerie L. Kuletz, Joe Matazzoni

Senior Copy Editor: Julie Ericksen Copy Editors: Cathy E. Abes, William Freais, Felicity O'Meara Editorial Assistant: Mark Hurlow Editorial Administrative Assistant:

Otto Waldorf

Editorial Secretary: Sharon Roe Contributing Editors: Danny Goodman, Jim Heid, Steven Levy, Erfert Nielson,

Lon Poole, Charles Seiter, Franklin Tessler, Bruce Webster

Harry Miller

Corporate Editor

J. Kelley Younger

Editorial Director

Karen Wickre

Editorial Administrator

Assistant to the Editorial Director: Daniel C. Berkowitz

Art and Design

Designer: Susan Howard
Associate Art Director: Joanne Hoffman
Senior Design Associate: Leslie Barton
Design Associate: Victoria Floyd
Assistant to the Director:
Jon Christianson

Production

Director: Herbert Linden
Senior Production Manager:
Linda Manes
Editorial Production Manager:
Ellyn L. Hament
Production Editor: Susan M. Ford

Assistant Production Manager:
MaryAnn DePietro
Lead Typesetter: Mark L. Duran
Typesetter: Virginia Weir
Advertising Booking Coordinator:
Rosanne Reynoso
Advertising Billing Clerk: Kevin Greene

Research

Director: Cheryl Woodard Manager: Gary L. Rocchio Assistant Manager: Ralph Ames Analyst: Ray Petsche Report Coordinator: Steven F. York

Corporate Development

Publicist: Shirley Gines Special Projects: Jeffrey S. Glines Administrative Assistant: Emily Bower

James E. Martin

Group Publisher

Marketing and Advertising Sales

Director of Advertising Sales: Larry Hilderbrand Senior Account Manager/ No. California (San Francisco): Penny Rigby (415/546-7722) Western Advertising Manager! Northwest: Patricia Navone (415/546-7722) No. California (San Jose): Cherie La France (415/546-7722) Midwest: Shannon Dolan (312/827-4477) Southeast: Judy Sutter (404/394-0758) New England: Claire Wallace (617/879-0700) New York: Bill Thompson (201/967-1350) So. California, Southwest, Texas: Lisa Hillgren (213/312-8008) Directory/46-Page Ads: Niki Stranz

Circulation

Director: John Griffin
Business Manager: Gail Egbert
Single-Copy Sales Manager:
George Clark
Single-Copy Sales Rep: Martin Garchar
Promotion Manager: Daniel Orum
Promotion Coordinators:
Billie Brownell, Ed Chittenden
Fulfillment Manager: Deborah Winders
Fulfillment Coordinators:
Evelyn Adenau, Doug Norde

Administration

Director: Janet D. McGinnis Accounting Manager: Pat Murphy Administrative Services Manager: Joseph Wollenweber Employee Relations Manager:
Shelly Ginenthal
Training Manager: John Knight
Technical Manager: Nancy Canning
Assistant to the President:
Christina W. Spence
Assistant to the Group Publisher:
Loretta Giglione

Corporate

PCW Communications, Inc.

David Bunnell

Chairman

Bartlett R. Rhoades

President & CEO

John Griffin

Vice President

Herbert Linden

Vice President

James E. Martin

Vice President

Jacqueline Poitier Vice President

Cl. 1 W 1

Cheryl Woodard

Vice President

Andrew Fluegelman 1943-1985

Founding Editor

December 1987 Volume 4, Number 12

Macworld** (ISSN 0741-8647) is published monthly by PCW Communications, Inc., 501 Second St., San Francisco, CA 94107. Subscription rates are \$30 for 12 issues, \$60 for 24 issues, and \$90 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$6 per year from Canada and Mexico; add \$12 per year for surface mail or \$80 per year for airmail from all other countries. Second-class postage paid at San Francisco. POSTMASTER. Send address changes to Macworld, PO. Box 54529, Boulder, CO 80323-4529. For dealer inquiries call 800/621-5461, in California 800/521-8455. Editorial and business offices: 501 Second St., San Francisco, CA 94107. 415/243-0505.

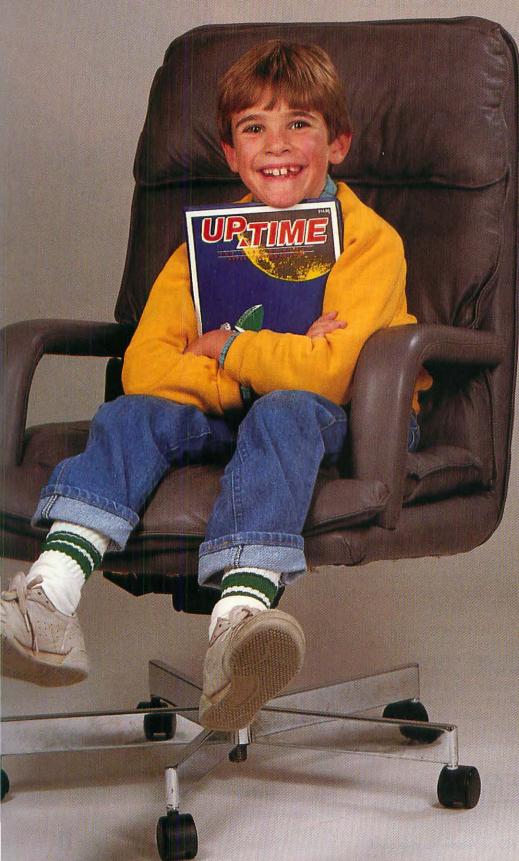
For subscriber service questions call toll-free 800/ 525-0643 (in Colorado 303/447-9330) or write: Subscriber Services, P.O. Box 54529, Boulder, CO 80322-4529. Macworld is a publication of PCW Communications, Inc. Macworld is an independent journal not affiliated with Apple Computer, Inc. APPLE and the APPLE LOGO are registered trademarks, and MAC, MACINTOSH, MAC-WORLD, and MACLETTER are trademarks of Apple Computer, Inc. Printed in the United States of America. Copyright ©1987 PCW Communications, Inc. All rights reserved.

Macworld is a member of IDG Communications, the world's largest publisher of computer-related information. IDG Communications publishes over 80 computer publications in more than 28 major countries. Fourteen million people read one or more IDG Communications publications each month.





"Dad and I have a lot of great times together...UpTimes"



"My family is pretty cool. We go fishing, we go to the science museum and we go for UpTime, because it's fun.

"Up Time comes in the mail every month. I like the games. Dad likes the games, but he says he gets it for the business stuff. My sister thinks she's a genius so she gets into all the educational parts.

"Mom laughs a lot. She says it makes her happy to see us happy. Mothers go for that kind of stuff.

"Dad always brings his briefcase home from the office. But, you know the nights when UpTime comes, he never opens it up."

Tommy Douglas Student Providence, Rhode Island

. 1	es, I want to share the UpTimes on my Macintosh! Please start my subscription to !pTime, the disk monthly immediately.
	12 Disk Issues for \$89.95 3 06 Disk Issues for \$69.95 3 03 Disk Issues for \$49.95 3 01 Disk Issues for \$14.95
	VISA □ MC □ AM/EX CHECK (payable to UpTime please) Add \$2 per issue inforeign countries, except Canada and APO) Check
 si	GNATURE AME
	ODRESS ITY + STATE + ZIP CODE
 	the Disk Monthly PO Box 299 • Newport, RI 02840 401-849-4925 • 800-437-0033



For those of you going places, here's a little something that solves big storage problems in the time it takes to say "who has the Farnsworth financial files?"

Introducing Totem™

A rather revolutionary Bering 20 mb Bernoulli compact disk drive system for Macintosh computers. And, the first truly *portable* 5½" system. One that lets you tote around 10,000 pages of data on a sleek cartridge about the size of a piece of bread.

Translated, that's 25 times the storage you get on one standard floppy.

Yet unlike floppies, the Totem is no slouch for speed. It's just as fast as a hard disk. In fact, your computer will think it's a hard disk. You can even share it with co-workers. And its advanced Bernoulli aerodynamics make it resist head crashing. If you've ever used hard disks, you know what a pain that can be.

But the real beauty of Totem is that it fits perfectly right under your Mac. No mess. No fuss. And no extra hardware to buy. To add storage, just pick up another Totem cartridge.

Last, but certainly not least, there's a whole family of Totem drives to choose from. They're all

in the brochure. To get yours, write or call Bering Industries, Inc., 280 Technology Circle, Scotts Valley, CA 95066. Inside California, call 800 533-DISK. Call 800 BERING 1 outside California. Just say "I'll take it."





20MB Bernoulli



Now check ours.

THINK Technologies proudly presents InBox,™ winner of the MacUser Editors' Choice Award for 1986 as the best new desktop communications package. The InBox family of products can be used on AppleTalk™ and NetBIOS LANs to transfer spreadsheet, word processing, database, graphics, publishing and other files from Mac to Mac, Mac to PC, PC to Mac and PC to PC. You can also create, send and receive memos and phone messages. All while running other applications. Plus, new Version 2.0 supports multiple message centers for larger networks and no longer requires a dedicated Mac. Now you can share information, communicate more and meet less. For more information or the name of the dealer nearest you, call 1-617-275-4800. Or write to us at the address below.

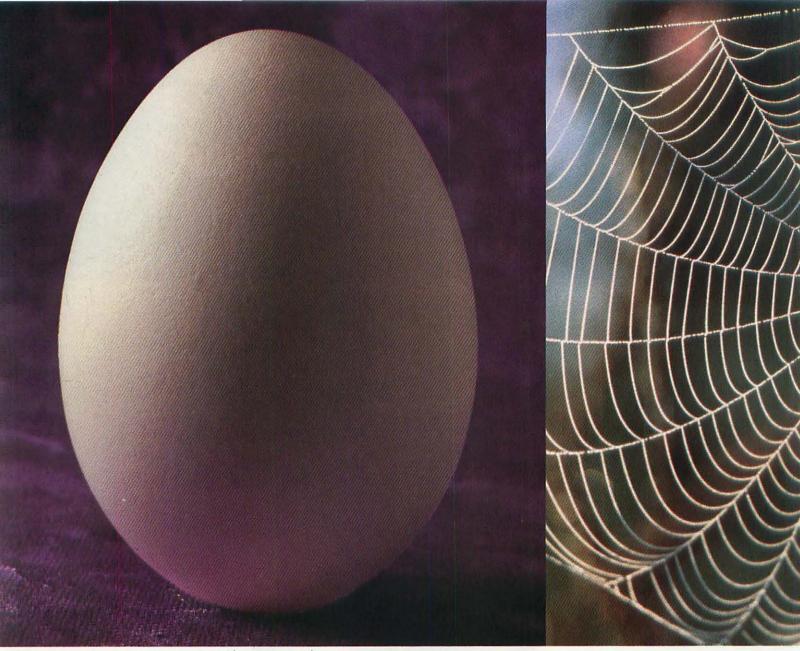


THINK Technologies, Inc. 135 South Road, Bedford, Massachusetts 01730

InBox is a trademark of THINK Technologies, Inc. Macintosh is a trademark of McIntosh Laboratory, Inc. and is used by Apple Computer, Inc. with its express permission. Apple Talk is a trademark of Apple Computer.



Circle 96 on reader service card



It's the highest achieve to be both beautiful an

skills of the hen and the spider have lishing beauty and productivity. rightfully earned universal acclaim.

ing software, the same credentials apply to Letraset, leaders in graphic design for nearly 30 years.

And now Letraset proudly introduces its most recent achievement: Ready Set Go! 4.0™ page layout software for the Macintosh™embodying

For the artist in you, RSG! 4.0 In the field of desktop publish- offers innovative design features that allow you to produce pages that are excitingly creative.

> Including automatic runarounds that make it easy to create extraordinary visual effects. An elegant new tool bar that keeps your tool boxes accessible to each docu-

In the field of nature, the design the perfect balance of desktop pubment you're creating. Powerful snapto design grids that help you interactively place text and graphics and visualize designs as you go. Facing pages that allow you to view, edit and lay out a two-page spread. "Lockand-Don't-Print" features that let you produce multiple pages for color overlays. And over 50 fill-and-pen patterns, based on Letraset's popular collection of rules and borders.



evenent of great design is the product not only sheets that let great design is the product not only

to create a variety of special graphics. throughout a one-page layout or

The practical side of you will be pleased to learn that RSG! 4.0 is also packed with a wide array of powerful time and effort saving production features.

For example, RSG! 4.0 comes equipped with full-function word processing and a built-in 100,000-word spell checker that can suggest correct spelling alternatives. Style

you make formatted changes hroughout a one-page layout or n extensive multi-page document

throughout a one-page layout or an extensive multi-page document with a single keystroke. A linker tool that allows text to flow automatically as new text or graphics are needed. And RSG!40 even boasts tabloid-size page formats up to a generous 99×99 inches.

In other words, RSG! 40 is the first page layout software of its kind. A tool for those who recognize that

great design is the product not only of powerful creative resources, but of a genius for efficient production.

Any authorized Letraset graphic design software dealer will be glad to illustrate the above with a Ready Set Go! 4.0 demonstration. For the name of the dealer nearest you, just call (800)722-0377.

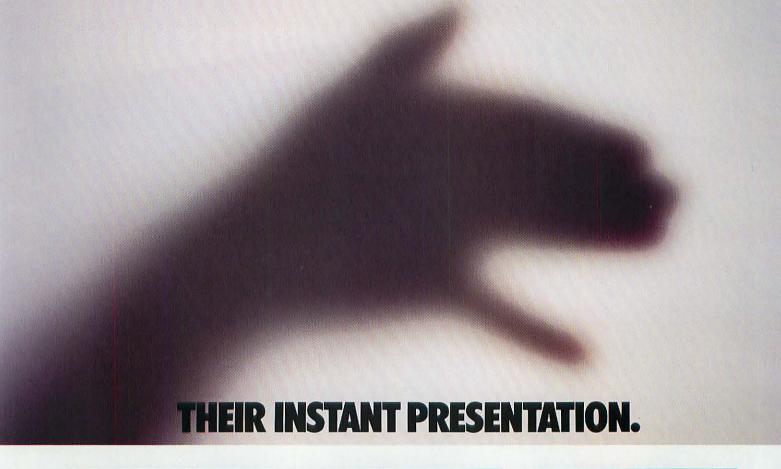
Letraset

⊗ ESSELTE

Communication by design.

Copyright 1967 Letraset OSA, Ready Set Go + O is a trade mark of Mannattan Graphic

Circle 598 on reader service card









OUR INSTANT PRESENTATION.

If you're a busy manager who wants to look your best at a moment's notice, but don't have time to be an artist, there's only one choice. MORE. Because MORE is the only presentation software that turns ideas into presentations instantly. By doing all the art work for you using its built-in "graphic artist."

MORE is both an award winning outline processor and an instant presentation maker. So, for example, you can outline a new product sales plan right now. Then, when you need to present your time table, just click the mouse and that part of your outline becomes a perfectly spaced bullet chart. Want to add impact with shadowing and double lines or different type sizes and fonts? Click again. Or pick another part of the outline, click, and there's your organization chart. You can even print the entire outline

and it's your sales meeting agenda. MORE is easy. Effective. And instant.

MORE outlining helps you get results fast. MORE presentations show off those results even faster. Maybe that's why MORE was named *MAC User's* product of the

year. And why it's the best seller. Get more time to map out strategy and prepare for meetings. Get MORE. It's the fastest way to organize and build presentations. Beyond a shadow of a doubt.

For MORE information call 800-441-7234, in California 800-626-8847.



Mac Bulletin

Goodbye Separator, Hello Color Cutter

Last month Macworld featured an article comparing the color-separation features of Quark XPress, Cricket Draw, LaserPaint, and Adobe Separator. The winner in the tests was Separator, a desk accessory that converts Adobe Illustrator and other EPS files into four-color separations. Shortly before the article went to press, Adobe postponed Separator's release indefinitely.

In the meantime, People's Publishing has filled the gap with its Color Cutter Systema combination software and service package that creates color files from PostScript documents. Like Separator, Color Cutter uses the color and tint information specified in an Illustrator document to generate four-color separations. Color Cutter can also create separations based on the Pantone Matching System. Users send separated files to People's Publishing in Atlanta for processing. Color-separation negatives are returned, with a choice of Chromalin or color-key proofs.-Jim Morton

More Fax

Look for the fax market to become a hot one for the Macintosh following Apple's delivery of its AppleFax Modem and accompanying software. Solutions, Inc., of Montpelier, Vermont, has already introduced MacFax, software that provides full background processing support of the AppleFax modem whether or not the system is running MultiFinder. This means that other applications can be run at the same time a fax document is being sent or received.

MacFax also includes Glue, which allows AppleFaxequipped users to exchange. at 9600 baud, documents created with almost any application, even if the recipient doen't have the application that the sender used to create the document. In addition. MacFax works with Solutions' own Desktop Express.

Raster Goes Vector

 Look for Silicon Beach Software of San Diego to make a real splash at January's Macworld Expo in San Francisco by introducing Digital Darkroom, an image-processing application that can convert raster images, like MacPaint documents, to vector images, like those created with MacDraw. It's a breakthrough for any computer, and it's happening to the Macintosh.

Digital Darkroom works with images captured by black-and-white scanners and handles up to 256 levels of grav. With Digital Darkroom, which will be shipped in the first quarter of 1988, you can heighten or soften the contrast between a defined area and its background by changing the gray-scale value of many individual pixels. Other possible effects include posterization and screening.

MacWar?

Another first for the Macintosh: Apple has teamed up with Magnavox Electronic Systems Company to seek a fiveyear, \$800-million contract from the U.S. Army. It's the first time Apple has entered a bid for a major U.S. government contract since opening its Washington, D.C., office in 1986.

Army purchasing agents are seeking both hardware and software to be integrated into a Command and Control System. Some of the computers will be ruggedized to withstand transportation in all climes.

A MacService?

A new 44-page manual about how to create newspaper-style graphics on the Mac is now available for \$10. Graphically Sound and Factually Fit: A Newspaper Guide to Information Graphics on the Apple Macintosh was written (and heavily illustrated) by Steve Segal, a graphic designer for the Lawrence Eagle-Tribune in Lawrence, Massachusetts.

Segal's book provides hundreds of tips for using programs like MacDraw and Cricket Draw, including how to use some advanced features that are not documented elsewhere. The book also includes instructions for making color separations with the Mac; tips for illustrating graphs, statistics, and maps; and recommendations for assembling a Macintosh-based information graphics system.

Orders may be sent to Steve Segal, Graphics Department, Lawrence Eagle-Tribune, Box 100, Lawrence, MA 01842.

Adobe's PostScript— In or Out at Apple?

All of a sudden, Adobe's PostScript is so "in" that perhaps a dozen companies are developing software that makes printers PostScript compatible. Several new Post-Script-compatible printers are to be available during the first quarter of 1988.

But with so many companies eager to come to the PostScript party, what happens if Apple decides not to throw one?

Steve Jobs, now spearheading a "next-generation" computer at NeXT, raised this possibility when he announced an agreement with Adobe to produce Display PostScript.

Display PostScript will function much like PostScript, except that it will write to the computer's screen. According to Jobs, using the same language for both the printer and the display means that a single piece of hardware can serve both outputs, and that no translation from one language to another is necessary.

If Apple decides to use the same description language for both the Mac's screen and the printer, Apple's printers could be less expensive than Post-Script printers because they wouldn't have to include a computer to handle page pro-

(continues)

cessing. And Apple could eliminate royalty payments to Adobe.

An Apple representative recently indicated that the company intends to upgrade QuickDraw to serve as a display-description language for its upcoming computers. QuickDraw already serves as a page-description language in General Computer's Personal LaserPrinter. Could an upgraded QuickDraw equal, or even surpass, PostScript's functions? Most observers agree that it's quite possible.

The Videodisk Connection

 One of the more exciting possibilities of HyperCard is its ability to drive a videodisk player. Thousands of video images then become "playable" by the Macintosh, which can send still frames to the television screen either one by one or so rapidly that they become movies.

Now there's a simple way to connect a Mac to a videodisk player. LaserTalk, a single cable from Optical Data Corporation of Florham Park, New Jersey, works in place of previous videodisk-player drivers (peripheral devices or complex computer cards).

Lesson Maker and Laser Write, LaserTalk's companion software, speed the assembly of videodisk lessons for group or individualized teachingthe Mac version operates with HyperCard. With LaserTalk, the Mac can access Optical Data's The Living Textbook and Windows on Science. two videodisk lessons used in hundreds of schools nationwide. For more information, call Optical Data at 201/377-0302.

Three Mergers

The acquisitions game continues with Phoenix Technologies' purchase of SoftStyle, a Hawaii-based publisher of Macintosh and MS-DOS printer driver software.

To compete more effectively with its long-term competitors AT&T and IBM, 3Com Corporation has merged with Bridge Communications. Bridge is a vendor of local area network systems, and 3Com manufactures and markets work-group computing systems.

Scientific Micro Systems (SMS), a major producer of very large scale integrated (VLSI) circuits, has acquired Levco Corporation, a manufacturer of Mac accelerator boards. Levco's product line will be merged with Super-Mac Technology, an SMS subsidiary best known for its DataFrame hard disks.

FidoNet on the Mac

Michael Connick's Tabby program, which will allow Macs to be used as FidoNet nodes using Connick's Mouse Exchange BBS software, is expected to be available in January.

FidoNet, a dispersed electronic-mail system written by Tom lennings, now has over 2000 MS-DOS-based nodes in North America, Europe, and Australia. Once a night, each FidoNet node shuts down to send and receive electronic mail.

One major gap in Macintosh BBS software still remains: the lack of a multiuser, multiline bulletin board system. Even the Berkeley Macintosh User Group is turning to a DOS-based system to improve both the availability and performance of its popular BBS.

A Parade of **PostScript** Compatibles

We'll call printer drivers being written to emulate Adobe's PostScript compatibles rather than clones-because they may not have exactly the same functionality.

If all goes well, these Post-Script-compatible interpreters will take the PostScript output of various application programs and turn it into pages of copy that approximate as closely as possible what you see on a Mac screen.

Nearly a dozen companies are developing PostScriptcompatible software because they feel that Adobe is doing too well to respond quickly enough to requests for new implementations, and that its licensing prices are too high. (Adobe responds that it's often able to meet a 90-day turnaround time and has dramatically lowered its fees for small-volume sales.)

PrintWare-with its 600by-1200-dpi, plain-paper laser printer-decided, after negotiating with Adobe, to write its own page-description language, PrintScript (at press time it was about 95 percent complete). Other announced products include a Bell & Howell printer that will use a Phoenix PostScript interpreter and several Nissho Electronics laser printers with CCS-Page from Control-C Software. Other companies that are reportedly producing Post-Script-compatible interpreters include Bauer Enterprises, Lincoln and Company, Conographic Corporation, Raster Images Processing Systems, and Eicon Technology Corporation.

Building It Right

Wouldn't it be great to design pipes, beams, or reinforced-concrete structures on the Mac and then immediately discover their structural strengths and weaknesses?

You can do just that with MacCOGO (COGO stands for coordinate geometry) from Erez Anzel Software of Ontario, Canada. This new program, which also works in color on the Mac II, calculates over 30 geometric and structural characteristics, including inertia, section modulus, and composite modulus of elasticity.

Calculations can be made with 7-decimal digit precision, and diagrams and text can be printed on a LaserWriter or an ImageWriter, MacCOGO's introductory price is \$95, and it may be returned within one month for a full refund if purchased directly from the publisher, Call Erez Anzel Software at 416/738-4601 for more information.

A DEC First

For the first time, Digital **Equipment Corporation** (DEC) has endorsed a Macintosh-oriented product. DEC is joining forces with Odesta, publisher of the Helix database, to develop a version of Helix that runs on both VAX and the Mac.

DEC expects the resulting compatibility between VAX and the Mac to help DEC, the second-largest computer manufacturer, sell more VAX units to Macintosh-oriented businesses, since manipulation of Helix will be almost transparent to users. However, DEC is still silent about endorsing connections to the Macintosh itself.

Quadruple The Speed Of Your Macintosh.



The Radius Accelerator™ quadruples the processing speed of every Macintosh application.

If you're doing graphic design or Desktop Publishing, the Accelerator allows you to create and combine pictures and text at unprecedented speeds. We are talking blindingly fast.

For time-intensive processing tasks like spreadsheets, scientific computations or sorting through databases, the Accelerator will redefine your concept of personal productivity.

If you're using a Macintosh™ as a file server, the Accelerator will earn smiles from everyone on

your AppleTalk® network.

The Accelerator is powered by the same 32-bit microprocessor that commands the Macintosh II.

In addition, it has a high-speed hardware cache that places frequently used information where it can be retrieved at the full speed of the MC68020.

Although the MC68020 is a commonly used microprocessor, Radius makes it work in an

uncommon fashion. Our innovative, proprietary technology translates into a smaller board with fewer power requirements. And that means significantly reduced costs.

Which is one more reason why the Accelerator

is such an exceptional value.

For those of you who think numbers speak louder than words, the Accelerator is available with an optional MC68881 coprocessor that blazes through floating point computations at up to 100 times the speed of the Macintosh Plus.

An Authorized Radius Dealer can install

an Accelerator board in your Macintosh Plus or SE computer in a matter of minutes.

But wait. Did we really say wait? The Accelerator has another unique feature. The MagicBus™

The MagicBus allows you to expand your Macintosh with another internal expansion board. So you can add future products from Radius or other developers.

Of course, you could use the MagicBus immediately—to install the ultimate Desktop Publishing peripheral. The Radius Full Page Display™ (FPD).

Like the Accelerator, the Full Page Display was designed by several key members of the original Macintosh team.

Today these people are at Radius creating enhancements for the Macintosh that are setting new standards for the industry.

If you really want to get the most out of your Macintosh, see a Radius dealer today.

And save yourself a bundle of time.

Circle 577 on reader service card



For the name of the Radius dealer nearest you call 1-408-434-1010.

Write from

When it's time to start putting words on paper, Microsoft® Write is the right place to start. Because no comparably-priced word processor gives you as many features. Or an easier way to get at them.

If you already own a Macintosh,[™] you already know how to use Microsoft Write. Because

Teamwork at work. You supply the words, Microsoft Write supplies the footnote number and location. it shares all those great Macintosh qualities. Like comprehensive, pull-down menus.

And familiar point-and-click operation.

But don't worry if you've never made friends with a mouse before. Microsoft's exclusive on-line context-sensitive Help puts the an-

> swers to most of your questions a mere button push away.

Microsoft Write's 80,000-word, customizable dictionary helps out built-in spelling corrector make all your words letter-perfect.

Plus you get all the documentation and telephone support that's helped make Microsoft's family of products the most popular of all Macintosh applications.

But making it easy to get

your words on paper is just the beginning.

For example, thanks to a built-in spelling corrector, those well-chosen words of yours will all

be impeccably spelled. And, thanks to another innovative feature, properly placed as well.

Because the page preview com-

mand offers you the unique Opportunity Team Microsoft Write with a LaserWriter™ printer and your wo

to examine your work a miniature page at a time. So you can review, and revise, all those little factors that make the difference between a good looking document and a great one.



the start.

Like where pages break and margins fall. And how the headers

and footers lay out.

What's more, with advanced features like automatic footnotes, newsletter-column formatting, and the ability to mix text and graphics on the same line, Microsoft Write adds authority, and clarity, to all types of writing. With about as

much effort as it takes

to dot an i.

But Microsoft Write doesn't stop there.

As your word processing needs grow, you can always take advantage of the powerful,

With Microsoft Write's page preview command, what you see on the screen is what you'll see on your paper. Line after line after line.

professional

Macintosh's

features of the

leading word processor, Microsoft Word, Version 3. Without going back to page one.

In addition to using your existing files, Word uses the same commands as Microsoft Write.

And then adds incredible features and flexibility to them. So the time you invest with Microsoft Write won't be wasted.

And neither will your money. All registered Microsoft Write owners can upgrade to Word at a

special, reduced price.

Before it's time to face up to the infamous blank page, call (800) 541-1261, Dept. A63, for the name of a Microsoft Write dealer near you.

Trust him to give you everything you need to get your writing started.

Except, perhaps, an opening line.



Got a question? Microsoft Write's on-line, context-ensitive Help gives you the answer. Right on the spot.

Microsoft.Write

"MicroPhone is a breakthrough in communications software..."

ons Proposition in

LOS ANGELES TIMES:

"The program is more sophisticated and easier to use than any...on either the PC or the Mac."

MACWORLD:

"... brings together the best traits of every Mac communications program."

INFOWORLD:

"MicroPhone is the easiest communications package we've seen."

With reviews like these who needs advertising?

They say the best advertising is word of mouth. So we're reprinting some of the multitude of words that have already been said about MicroPhone communications software for the Macintosh.

And what they're saying, universally, is that MicroPhone—created by Dennis Brothers—has far outdistanced all its predecessors. That for the novice, MicroPhone is the simplest telecom software ever devised. That for the expert, MicroPhone is the most powerful.

On-line for the lazy.

MicroPhone gives you the means to create infinitely elaborate macro (automated) routines with infinite simplicity. Its powerful script language is written in plain English, and it also features a recording mode that watches, saves, and repeats what you do. So no programming skills are required.

The upshot is that MicroPhone will save you time, hassle, and on-line fees by automating virtually every operation you now have to key by hand. Log on procedures. File transfers. And, for a good example, E-mail retrieval routines.

At a single command from you, Micro-Phone will dial your E-mail service, give your ID number and password. Navigate its way through the labyrinth to your mailbox. Check for mail. Log off if there is none. And if there is, MicroPhone will collect, print, and save all messages to your disk. Then, politely log off. If you prefer, you can direct MicroPhone to initiate this sequence simply by inserting the disk. Or automatically, at any specified time, day, night. Or at regular intervals.

Anything else you need to do, from collecting stock quotes to sending and receiving files, is just as simple.

Try it out at home or office.

You can find out firsthand just what a remarkable program MicroPhone is. Without risking a cent. We give you a thirty-day money back guarantee, no questions asked. Which is virtually unprecedented

Since MicroPhone is not copy protected, we obviously have vast confidence both in our program. And in you.

Communications Software for the Macintosh

> MacUser Editor's Choice Award

Let's get technical box. Baud *Scripts Invoked by Button

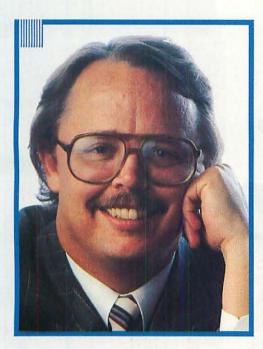
- 50 to 57,600 Baud • Supports XMODEM YMODEM
 - YMODEM ASCII IK BLOCKS
- MACBINARY MACTERMINAL 1.1 Emulates TTY
- VT52 VT100
- Capture file OntOff
 Printer OntOff
 Auto log on scripts for information utilities provided
- Manu
 Command Key
 * Scripts have full logic constructs
 * Works with ALL Macintosh
- models & LaserWriter
 Works with all async modems
- (Hayes included)
 Includes Switcher &
- CompuServe subscription
 * lacludes text editor licensed
- from Dreams of the Phoenix Inc.
 Documentation by Neil Shapiro



SOFTWARE VENTURES

2907 Claremont Avenue Suite 220 Berkeley, CA 94705 415-644-3232

In Search of Apple's Achilles' Heel



present in its pocket.
But will its magic spell last as we move into the next generation of computing?

Dig around deep enough and you're sure to uncover a worm or two somewhere at Apple–and I'm trying to find out where it is.

Don't get me wrong. I'm not a nihilist who harbors ill feelings toward the computer maker. I stood by Apple in its darkest days when the conventional thinking was that the Macintosh would bite the dust and perhaps Apple would have to make an IBM-compatible machine.

It's just my natural inclination to be skeptical. And right now there's an almost fundamentalist fervor surrounding Apple Computer and everything it does. The fact that nearly every computer guru and opinion maker in the personal computer industry thinks that Apple is really smart, that it's outgunning IBM, that it's playing all its cards right—frankly, this has me worried. Because these people have never been right about anything in the past.

So I think we need to take a look at some areas of possible concern for people who use the Macintosh, as the old year draws to a close and 1988 begins. Here are some potential trouble spots in the Macintosh world that could escalate into major conflicts in the coming year.

First of all, I'm concerned about Apple's so-called strategic alliance with Digital Equipment Corporation (DEC) as Apple pursues its quest for connectivity with DEC's VAX line of minicomputers. How is that alliance truly going to benefit the Mac user? Does Apple really believe that it's gaining an advantage by linking up with DEC? Or is it merely being used by a much more sophisticated company that has a history of buying expertise and innovation when it can't succeed on its own in the marketplace?

Apple should heed the lessons of Ramtek and Tektronix. Remember how DEC used those companies' technologies as a front end for its graphics terminal until it finally got its act together and built its own VAX workstation? After that, DEC kissed Ramtek and Tektronix good-bye.

More to the point, DEC has shown that it can't build its own personal computers. Witness the disastrous DEC Rainbow and the improbable Pro. Not to mention DEC's puny Z-80-based PC with its two lackluster disk drives. DEC has now had three generations of bad machines. It could be that Apple presents an enormously tempting takeover target for the industry giant.

I have to wonder if the VAX is really DEC's Trojan horse in Apple's connectivity stable.

I also have to worry about Apple's strategic planning and product teams. Do they have the right stuff to propel Apple to the \$5 billion level? Apple's senior vice president of research and development, Jean-Louis Gassée, and his cohorts are doing some things right. They've developed the Mac II, and a lot of people say it's a better computer than the 386 machine. They've expanded the definition and capability of the Mac's operating system—they have MultiFinder and *HyperCard*. But what are their flaws? What is the quantum leap they still need to make?

At the recent Seybold Desktop Publishing Conference, Apple's arch-nemesis Steve Jobs predicted that Macintosh technology would peak by 1991 and be replaced by a new breed of workstation, as exemplified presumably by his own NeXT, Inc.'s future product offering. "The Macintosh software architecture will reach its limits then," Jobs warned.

Apple has shown that it can take the existing Macintosh technology, extend it, build on it, and make it much more sophisticated. But can Apple create a whole new technology of computers—and make the right choices?

(continues)

Decisions, I

Choose with confidence from Jasmine's wide range of quality, innovative products at affordable prices. From the pacesetting Direct Drive series, to the unique BackPac 40, you never compromise quality for price when you purchase a Jasmine product. Discover why MacWorld (July 1987) said "It's easy to fall in love with the quiet Jasmine drive."

MegaDrive™

Hard drive power with the freedom of a floppy.

MegaDrive™ is a high speed, SCSI storage device featuring removable, 10 megabyte, MegaFloppy™ diskettes which are much more reliable than other removable, mass storage products. Compact in size, it fits under your Macintosh or into a Macintosh carrying case.



Accountants can put each account on its own disk and lock them away for safe keeping. Desktop publishers can put fonts, clip art, layouts and different clients on separate MegaFloppy disks. Musicians can organize their sound libraries and samplings and the average Macintosh user can finally make heads or tails of the mountains of floppy disks they've

acquired over the years!

MegaDrive \$999 (\$1029 Visa/MasterCard)

MegaFloppy Disks: \$39.95 each (\$41.15 Visa or M/C) MegaFloppy Three-Pack*: \$109.95 (\$113.25 Visa or M/C) *Three packs include bandy Storage Case

To Order Call (415) 621-4339

Remember that Jasmine saves you 40% or more.

Our prices include 30 Day Trial/Money Back Guarantee, and Full One Year Warranty.

Every drive is shipped with a technical holline number to answer any questions. MegaDrive, Direct Drive 20, 40, 50, 80, 160, BackPac 40, Jasmine, are trademarks of Jasmine Technologies, Inc. Product specifications and prices are subject to change. Prices include 2'cable and PD software. Prices do not include shipping, CA sales tax (6.5%) or special rush handling Apple is a registered trademark of, and Macintosh is a trademark licensed to Apple Computer, Inc.

Call for dealer and developer pricing.





Direct Drive Series

Hard drives that re-defined value and quality.

From the Direct Drive 20, to the

revolutionary Direct Drive 80, Jasmine now offers a full spectrum of drives to meet every user's needs. Our newest addition, the Direct Drive 160, offers an incredible combination of power and speed for just \$2899! The Direct Drive series is synonymous with excellent construction, no cost "extras" and high reliability. Back up software included.

W The Jasmine Direct Drive 80 is an excellent value, offering not only outstanding price and performance, but an excellent price against the small disk market as well. InfoWorld highly recommends looking at this drive for your Macintosh.

- InfoWorld June 29, 1987

66 The Drive ran flawlessly during the review period, with very good performance and no compatibility problems of any kind.
99
— MacWorld July 1987

InnerDrive[™]Series

New series of internal drives for the Macintosh

Jasmine's InnerDrive Series begins with ultra high speed, yet economically priced, internal hard disk drives for the Macintosh II."

Pre-formatted, they work right out of the box and are very easy to install requiring no special tools or expertise.

They include mounting bracket, cables and other hardware plus nine megabytes of public domain software, shareware and back-up software. Self-parking.

InnerDrive 90/II: \$1499 (\$1544.00 Visa/MasterCard)

InnerDrive 50/II: \$999 (\$1029,00 Visa/MasterCard)

JasPort

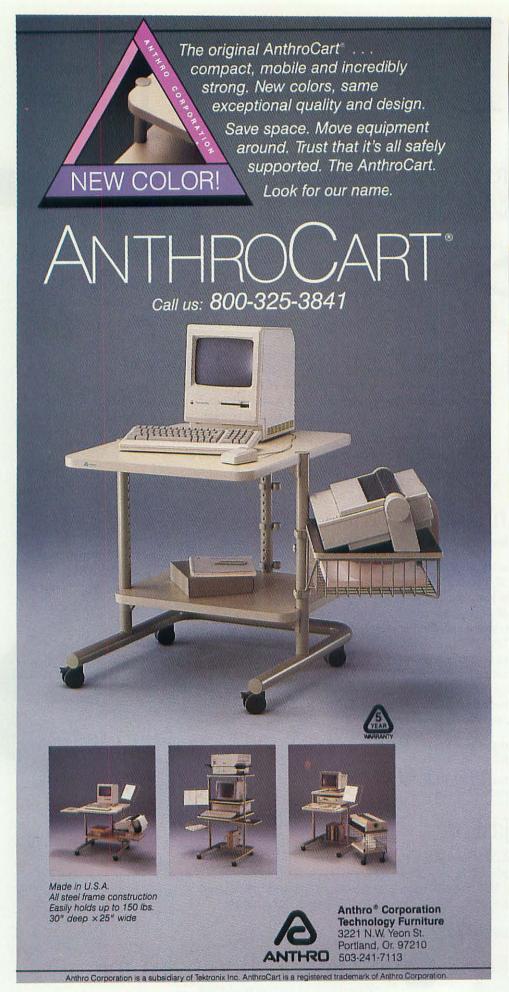
SCSI Power for the Macintosh 512.

JasPort, a Macintosh Plus compatible SCSI port for the Macintosh 512 Enhanced or 512K with ROM upgrade, permits Macintosh users to utilize Jasmine's Direct Drive, MegaDrive and other SCSI devices. User installable.

JasPort **\$129**







David Bunnell

Or will Apple be stuck in the same bind that IBM is in today—where everything has to be compatible back to the old software base? Is that going to be the ultimate limitation?

It will be interesting to see what choices Apple makes vis-à-vis NeXT, Inc.—or, for that matter, how it stacks up against the company I perceive to be its real contender, Sun Microsystems.

In fact, I think that Sun could emerge as a much bigger player than it's been in the past. Its strategy of using different processors and building its own RISC chip could turn out to be very effective. One major difference between Sun and Apple is that Sun has taken the RISC technology and has opted to share it with developers so that other companies can build computers that are compatible with the Sun system.

This, too, could be an important lesson for Apple Computer. It reminds me of the early days when IBM shared its PC BIOS with other manufacturers, thereby ushering in the age of PC clones. That established the PC as the industry standard.

To my mind, therefore, Sun could very well prove to be Apple's Achilles' heel, especially as Apple scrambles to position itself in the workstation market. 1988 will definitely be the Year of the Workstation, no question about it. It's really going to happen. I wonder if the Mac II can make the necessary inroads into that market to become a really solid product.

I asked Sun Microsystems' president, chairman, and CEO, Scott McNealy, what he thought about Apple's prospects in this growing field.

"I think that over time, customers could get very frustrated with the closed, proprietary Apple user-interface," McNealy observed. "A couple of things could go wrong for Apple in the long term. One is that it wouldn't be able to get the whole personal computer industry behind it. Second, the software vendors might decide that they can be more successful with a noncontrolled, nonproprietary interface.

"It has happened in just about every other area of computer technology," McNealy noted. "It's happened in networks, it's happened in CPUs, it's happened in operating systems, it's happened in graphics. I see no reason in the world why the industry won't move to a non-proprietary look and feel in the long term. History has shown that this, not competition, is the real pitfall."

Time will tell whether that will happen.

(continues)

The Barbecue Brothers would rather bake beans than count them.

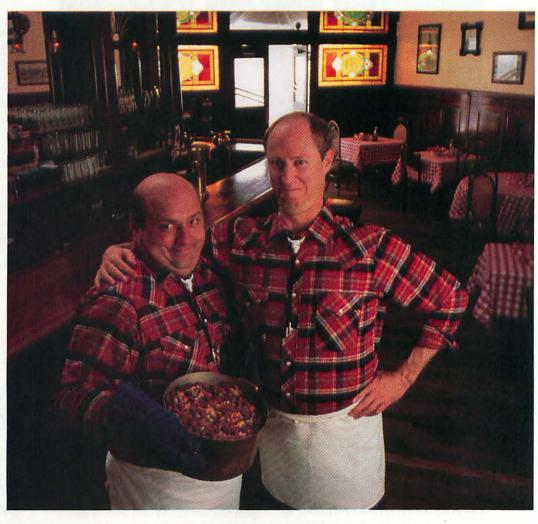
It's only the best chili in the whole doggone state.

But it might not be, if Larry Keenan and Curt Fischer had to spend more time balancing their books and less time balancing their spices.

That's why they bought In-House Accountant,™ from Migent.

With In-House Accountant, the boys spend very little time entering transactions. Or reconciling bank accounts. Instead, the program does it for them. Automatically, and in a very Macintosh™ kind of way.

That means all the information is right there on the desktop, so the guys can see at a glance things like their checking



balance, or the amount they spent on hot peppers last month. For payables and receivables, they simply zip among their accounts without ever having to change modules, or even close a window. And when they enter

> a transaction, all related items in other lists are updated immediately. So there's never a need for "posting."

All of which means they have more time to do what they do best:

which is make the best chili in the whole doggone state.

In-House

Accountant. See your nearest Migent dealer, or call

1-800-633-3444 for more information.

Trademarks: In-House Accountant, PC Software Development; Macintosh, Apple Computer, Inc.

Circle 742 on reader service card

Name		In-House
Company/Title	19199	Accountant
Address	Party P. John	014 3
City/State/Zip		t-minute man
Phone	IHAM/MW/12	



BLINDINGLY FAST. By sending your print files to the background and returning control of your Mac to you, SuperLaser-Spool lets you work and print at the same time. And it does this 5 to 40 times faster than its nearest competitor.

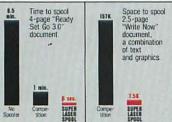
SuperLaserSpool gets you back to work fast. You never wait for the printer, no matter

how many documents you have queued up or even if the network is busy. SuperLaser-Spool automatically manages the entire printing process while you work.

WORKS WITH ANY APPLE® PRINTER.

SuperLaserSpool can print to the LaserWriter and ImageWriter™ (either direct-connect or AppleTalk™connected).

INCREDIBLY COMPACT. Other spoolers require so much storage space that a hard disk is essential. Not so with SuperLaser-Spool. You can use it with floppy-disk systems because its files are so compact.



Look how much faster SuperLaser-Spool will give your Mac back compared to its competition. SuperLaserSpool's files are so small, you don't bave to worry about running out of disk space.

DOWNLOADED FONTS.

Unlike most of its competitors, SuperLaser-Spool can handle files that have multiple downloaded fonts.

EASY TO USE. With SuperLaserSpool, you can view all the jobs in the print queue, change their priorities, delete jobs, receive on-screen help, and check on network activity. Your

spool files are always safe, even if the system crashes.

SuperLaserSpool works with almost all Macintosh applications. You can even leave and enter different programs without disrupting the printing of documents.

And it's completely invisible: You can launch it and forget it's even there.

- SINGLE-USER: \$149.95
- **MULTI-USER: \$395.00**

Get SuperLaserSpool at your local SuperMac dealer today, or order direct.



950 N. Rengstorff, Mountain View, CA 94043 (415) 964-8884

Macintosh is a trademark licensed to Apple Computer, Inc. by McIntosh Laboratory, Inc. LaserWriter, ImageWriter and AppleTalk are trademarks of Apple Computer, Inc. ⊚ 1986 SuperMac Software.

David Bunnell

One of the obvious drawbacks to Apple's proprietary system is that since other companies aren't able to make Mac clones, there is no low-cost Macintosh. In my opinion, this is possibly the biggest Black Hole in Apple's strategy.

At Stewart Alsop's Agenda '88 personal computer industry symposium, which was held in San Diego recently, T/Maker president Heidi Roizen asked CEO John Sculley when Apple was going to come out with an affordable Macintosh. He replied that since the power users are the ones who are financing the industry, Apple does not feel compelled to bring out a low-cost machine. He suggested that the Mac Plus and the Mac SE were, in fact, Apple's low-cost Macs.

Well, I don't buy that. They are not low-cost Macs. And at the rate Apple is going in its pursuit of the corporate market, it can't possibly build a big enough customer base to reach its goal of becoming a \$5 billion company. To do that, Apple will need to have an installed base of 5 million –not the 1.2 million or so that it now has.

A lot of first-time customers will be tempted to buy an MS-DOS Tandy computer for under \$1000 just to get started.

I have concerns about Apple's pricing policy. Apple may be making a serious mistake by ignoring the low end of the market. By building more expensive, more complicated, and more advanced Macs, it runs the risk of cutting off a lot of potential customers.

At the recent AppleFest in San Francisco, I heard a lot of people complain that they were disappointed by the small amount of new software and products available for the Apple IIGS line. They thought it was abysmal compared to what was available for the Mac. Some of them told me they really wished they had bought a Mac instead, because they just

(continues)

expandability, then at some point you're going to confront the next logical question: what's the best way to expand it?

And that will lead you to a conclusion that's logical to the point of being foregone: HyperCharger O20.™

This is the enhancement board that sets standards for the others.

It will let you run most Macintosh software up to four times faster. It can contribute an additional megabyte

If you buy the Macintosh SE™ for its of RAM memory and may be easily up-find a logical reason not to add on. graded to four.

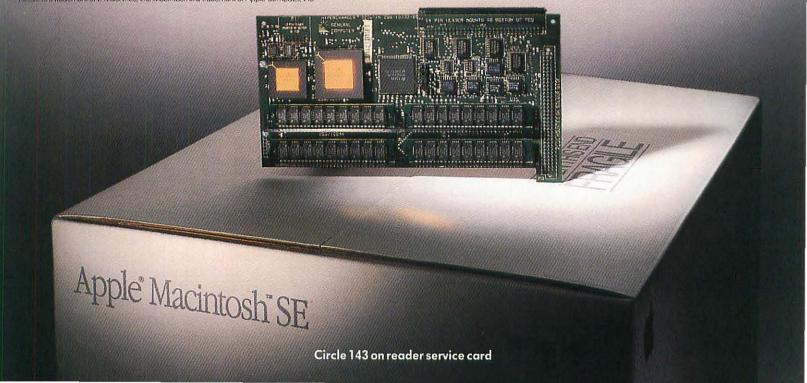
> It's equipped with an expansion port that lets you add E-Machines' The Big Picture™ and other large screen monitors. It will even let you add a coprocessor for serious number-crunching (from 5 to 50 times faster).

> All of which makes HyperCharger 020 something more than a sensible addition to your Macintosh SE: it's the first such add-on you almost have to

Of course, we fully expect you to be the judge of that. And you can make that judgment at any authorized General Computer dealer. For the name of one near you, call (800) 634-9737.*



In Floris cal (800) 854-9737 in Canada, (800) 263-1405 @1987 General Computer Corp. The General Computer logo is a registered trademark of General Computer Corp. HyperCharger is a trademark of E-Machines, inc. Macintosh is a trademark of Apple Computer, Inc.



intosh" users who find themselves wishing there was a personal printer that lived up to their personal computer.

Including the executives, entrepreneurs, academics and other professionals looking for an affordable entree into the world of desktop publishing

General Computer presents the reassuring paradox you see illustrated on these pages: the first affordable laser printer that prints like it costs thousands more.

INTRODUCING THE PERSONAL LASERPRINTER.

As the documents shown here demonstrate, the General Computer Personal LaserPrinter™ (PLP™) concedes nothing in printing capability to systems selling for twice its price.

If that still seems hard to believe, consider this. Until now, anyone who bought a laser printer was also buying a computer. Because laser printers have always needed a processor, memory and other expensive hardware to create a printable page.

Our laser printer, on the other hand, eliminates a great deal of this expensive hardware in favor of ingenious software.

Software that allows the printer's imaging to be performed by the

ime to Return to Gold? There's probably no better hedge against inflation. Gold is the internationally recognized medium of exchange. It's completely portable.

And, unlike paper money, it has inherent value. But is it for you? In times of economic or political turnoil people turn

again and again to gold. That's what makes gold prices go up in times of inflation. And why gold moves up when world peace is threatened.

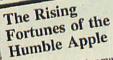
As an investor, you have five basic ways to purchase gold.

1. Gold futures, like all futures contracts, are basically closed-ended speculations intended for sophisticated traders.

2. Gold stocks. Shares in mines are traded on all major exchanges. Some, especially South African mine shares, pay substantial dividends. (This is due to the volatile political situation there.)

3. Gold bullion can be bought at all large brokerage houses. These firms also store and insure bullion.

continued on page 12



Consumer demand has mushroomed in recent months for fresh fruit and produce.

What are the best plays in this trend for investors?

Dr. Vie Scallione, of the Washington State Department of Agriculture says

ontinued on page 3

	4 Real Estate	
mex Stocks	B Special Report	
Commodities	13 Technical Analysis	
NYSE	13 Treasury Issues	
OTC Stocks		

Picking Your Stockbroker

If you happen to be picking stockbroker for the first time, a good way to begin i with some solid recommen dations.

Ask your lawyer, account ant, or banker for the nam of a stockbroker, or a brokerage firm, that cou take on your account.

Some investors suggest choose several brokers different firms and let handle a part of your folio until you decide right one.

The broker you choo should have a philo about investment th close as possible to own. Find out how

continued on page 5

Avoiding Wall Street's blind alleys: A Prudent Investor Special Report. See p. 9

PRINTED ON HICH ON OUR computer you already own: the Mac- the Macintosh. (Either the intosh II Macintosh Plus, the with any

Macintosh SE, or

hard disk.)

This arrangement also means the PLP is much more com-

pact than other laser printers. (An almost diminutive 16"×161/2"×9")

And having fewer parts, much less likely to need repairs.

THE PROOF IS IN THE PRINTING.

As you can see, a case could easily be made for buying the PLP on economics alone. But that would be selling it short.

Because the ultimate measure of any printer is how well it prints.

In Hinds, call (800) 854-9737. In Canada, (800) 263-1405. \$1987. General Computer Corp. The General Computer Logo is a registered trademark of General Computer Corp. Personal LaserPrinter and PLP are trademarks of General Computer Corp. Computer Logo. Sanda Computer Corp. Personal LaserPrinter and PLP are trademarks of General Computer Corp. Computer Logo. Sanda Computer Corp. Personal LaserPrinter and PLP are trademarks of General Computer Corp. Computer Corp. Computer Logo. Sanda Computer Corp. Personal LaserPrinter and PLP are trademarks of General Computer Corp. Computer Corp. Computer Corp. Computer Corp. Personal LaserPrinter and PLP are trademarks of General Computer Corp. Compute

ime to Return to Gold?

There's probably no better hedge against inflation. Gold is the internationally recognized medium of exchange. It's completely portable. And, unlike paper money, it has inherent value. But is it for you?

In times of economic or political turmoil people turn again and again to gold.

That's what makes gold prices go up in times of inflation. And why gold moves up when world peace is threatened.

As an investor, you have

1. Gold futures, like all futures contracts, are basically closed-ended speculations intended for sophisticated traders.

2. Gold stocks. Shares in mines are traded on all major exchanges. Some, especially South African mine shares, pay substantial dividends. (This is due to the volatile political situation there.)

3. Gold bullion can be bought at all large brokerage houses. These firms also store and insure bullion.

continued on page 12



The Rising Fortunes of the **Humble Apple**

Consumer demand has mushroomed in recent months for fresh fruit and produce.

What are the best plays in this trend for investors?

Dr. Vic Scallione, of the Washington State Department of Agriculture says

continued on page 3

Amex Stocks	4	Real Estate	14
Commodities	8	Special Report	9
NYSE	13	Technical Analysis	6
OTC Stocks	13	Treasury Issues	12

Picking Your Stockbroker

If you happen to be picking a stockbroker for the first time, a good way to begin is with some solid recommendations.

Ask your lawyer, accountant, or banker for the name of a stockbroker, or a brokerage firm, that could take on your account.

Some investors suggest you choose several brokers at different firms and let each handle a part of your portfolio until you decide on the right one.

The broker you choose should have a philosophy about investment that is as close as possible to your own. Find out how he

continued on page 5

And a draft mode that lets you rapidly print out works-in-progress for editing and revision by others.

Then, once all the revisions are complete, the PLP quietly provides extraordinary finished output.

Near-typeset quality presentations, newsletters, memos and reports produced with software like Microsoft's Word and Aldus' PageMaker.® All printed with a new generation of laser technology that turns out richer contrasts than ever before.

AN INVITATION TO SKEPTICS.

In other words, the PLP does for printed communications what the Macintosh did for personal computing.

It provides a sophisticated, vet affordable tool for anyone who needs to manage large amounts of information—and wants to work smarter and more creatively in the process.

So to answer the question we began with: the PLP printed the document that appears on the right. But you don't have to take our word for it.

We invite you to make your own comparisons through a PLP demonstration at any authorized General Computer dealer. Where you'll also be able to com-

\$5000 LASER

Like vastly more expensive laser printers, the PLP allows you to print scanned photographs and illustrations, high-resolution graphics created with software like MacDraw® and Microsoft's Excel, and otherwise juggle words and pictures until you have them exactly where you want them.

Avoiding Wall

Street's blind

alleys: A Prudent

Investor Special

Report. See p. 9

But the PLP also provides assistance even these vastly more

expensive printers don't.

Including a choice of Bitstream® fonts limited only by your hard disk's capacity to store them. (Fonts you can easily adjust to any point size, or fraction thereof.)

A preview feature that lets you review each page before you print it.

pare another pair of documents that are far easier to tell apart:

A Personal LaserPrinter price tag. And that of any other laser printer of equal quality.

For the name of the dealer nearest you, call (800) 634-9737.*



Microsoft is a registered trademark of Microsoft Corp. PageMaker is a registered trader

POWER HUNGRY?



The ProStation 1024, up to one Gigabyte of Storage. The Most Powerful Mac System Ever?

The ProStation is a drive that Apple specifically requested we develop and show at the introduction of the Mac II. The ProStation allows you to reconfigure at any time to fit your needs, all the way from 172 meg worth of storage to 1024 meg (one gigabyte.) So you can start off with a little and by adding modules directly into the unit, increase your storage as your storage needs grow.

A FULL LINE OF GREAT REVIEWS AND FINE FEATURES

Mirror Technologies offers the broadest line of Mac storage products in the world, and we have longer than any other company in the Mac market.

Maybe this is why we get the great reviews we do. . . experience matters.

InfoWorld said "If your in the market for a big and fast SCSI bard disk you should consider the Mirror. It's fast, and the bard disk is quiet." They then continued to say our tape backup used "our favorite software"

backup used "our favorite software for image backups and file by file copying." (Aug 3, '87) Our big drives use voice coil technology boasting up to 19 ms access times to give you screaming access to your important records. We automatically park the heads so that you can spend more time working and less time worrying. Our drives come with the THINK Technologies LaserSpeedTM, a \$99 value

and Quickprint[™] (our imagewriter spooler), a \$79 value. Our big drives come with tape backup and our famous SafetyNet[™] Manager and Personal SafetyNet[™] backup software, a \$150 value. All of our drives are covered by a full-year warranty.

TAPE BACKUP SECOND TO NONE
Mirror was first to develop tape backup
for the Macintosh. MACazine said
"The backup program quickly
proved to be one of my favorites."
"Its simple to use and readily
bandles most backup/restore
requirements for files, folders and
full volumes." This is the same kind of
feedback that we get from our users
worldwide. Mirror was also the first to
develop the forty megabyte tape drive
that has now become the Apple
standard. We strive to be at the front of

To find out more, call us at (612) 426-3276 and we'll help you get the max from your Mac.

the pack.



From left to right: Mirror Tape 40, Mirror 30X, 40X, 40/40, 80/40, 450 SE internal, ProStation 1024, 85X, 172X.

MIRROR TECHNOLOGIES Inc.

2209 Phelps Road, Hugo, Minnesota 55038 (612) 426-3276

Macintosh SE, Macintosh II, AppleShare are trademarks of Apple Computers, Inc., LaserSpeed is a trademark of THINK Technologies.

Circle 406 on reader service card

David Bunnell

don't see Apple supporting its low-end machines.

That is really a strong case for having a low-cost Mac. And given Apple's incredibly high profits, I think the time for one is now. Otherwise, Apple runs the risk of letting Tandy and the PC clone makers take over the low-end market. A lot of first-time customers will be tempted to buy an MS-DOS Tandy computer for under \$1000 just to get started. And once they begin to make an investment in MS-DOS software and develop more sophistication, they will be inclined to buy more powerful MS-DOS

Gradually, they'll work their way up to a 386 machine-and not to a Mac II. And Apple will have missed out on this huge market.

Other clouds on the happy Macintosh horizon: as I say, I don't want to be a navsayer, but when 90 percent of the personal computer world is clamoring about Apple's infallibility, that's when I feel compelled to step back and offer a contrarian's view.

Usually I'm right in my instinct to ride against the herd. I stuck by Apple when today's zealots were throwing brickbats at the Macintosh. Now, I find myself sticking more than ever by Microsoft Windows in spite of all the flack it's been getting.

I believe that the Windows/386 operating environment, which was recently announced by Microsoft and Compaq, represents a truly formidable challenge to Apple -because suddenly the 386 machine has some power capabilities the Macintosh currently lacks. As good as the Mac II is, it can't really compete against machines that use Windows/386, a programming breakthrough that allows you to take a 386 PC and divide it up into any number of 640K workstations.

This is the first real taste of multitasking we have seen in personal computing to date. In fact, Windows/386 creates a potential for doing things on a 386 machine that are even more Apple-like than Apple-such as cutting and pasting between several applications.

Although the challenge of Windows to Apple has been almost a joke in the past, at this point it's not exactly clear who is going to have the last laugh. The threat of Windows/386 once again touches on the question of future power pathways for the Macintosh line.

When is Apple going to upgrade the Mac II to a 68030 machine? Is that where its strength and salvation lie?

Abacus Acta Alarm Clock Analog Clock ApplFont Area Code Lookun **ASI Talk** Backdron Base Tool BCS*Clicker Big Ben Calculator Calendar CalendarBook Camera Charger Chooser Comments Control Panel Cube DAFont Diskinfo DiskTools II DiskTop Display Message Englorer File Tools FileInfo FileStar Find File Fin Pic FreeMem **Fun House Function Keys** Gone Fishin' Gren-Wo Guidance **HDMount HDValet** Hey Calc Idle JumpStart Log Key Caps KeyMouse Laser Engelone LaserStatus LifeSaver LockOUT Mac's Headroom Mac Clock MacDialer MacTerm Magnifu Magnifying Glass MathTupe MCS Editors McSink Memory **Memory Monitor** Mini Sci Calc MINIWRITER MockWrite Moire Idle **Mouse Print** Notepad NotePad-ParmRlaster Phone Pad Poly Idle Print Text PS Printer 000 Editor Q&D Filer QDial QuickSheets RasNIK Rays

ReadiPrinter

Savior

ReadMacWrite

RPN Calculator

Sci Calculator

Suitcase

Free at last.

The liberation of fonts and desk accessories is now at hand. Suitcase™ allows unlimited access to fonts and DAs—and they don't have to be installed in your System file.

Imagine having fifty or more of your favorite DAs in your Apple menu. Or, if you're involved in desktop publishing, how about three hundred or more fonts at the ready?

Having unlimited access to every font and DA means always having the right tool at your disposal.

Now that's freedom.



Compatible with MultiFinde Suggested retail price \$59.95.
Order from your favorite software or call (800) 443-0100, ext. 451. \$3.50 shipping/handling charge per order.

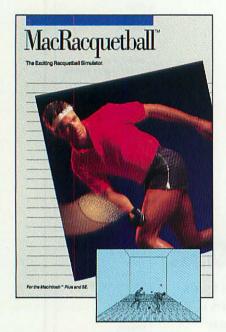
The desk accessory (DA) and font names above, some of which are trademarks owned by parties not affiliated with Software Supply, are illustrative of usage only and do not imply that the DAs or fonts themselves are part of the Suitcase* product.

Font Abu Dhabi Aldous Alice Apple I Arabic Art Deco Athens **Avant Garde Buant Garde Gothic** Rasel Bodoni Bodoni Ultra Bookman Boston Bubbles Camelot Cairo Candu Carta Cartoon Cavanaugh Centura Century Old Style Cheltenham Chicago Circus Cirth Clinton Cooper Black Contic Courier Couentry Cream Cursive Dali Demographics Demotic Fluish Eon Epsilon Fancy Caps Fargo Finneu Fletcher Franklin Gothic Galliard Garamond Gatsbu Light Geneva Glypha Goudy Old Style Hamburg Helvetica Helvetica Light Hollywood Houston Karinna LED Letter Gothic London Los Angeles Lubalin Graph Melion Memphis Micro Laser Micro Extended Mobile Monaco Montereu New Baskerville New Century Schibk New York News Gothic NY Nights Optima Orator Palatino Palo Alto Park Avenue **Prelude Script** Prestige Elite

San Francisco

Sans Serif

(continues)



The hottest sport on a court – the hottest game a Macintosh™ can handle.

Even if you've never been on a racquetball court, you'll spark to the excitement of this challenging simulation.

MacRacquetball turns your Macintosh screen into a full perspective 3-D display of court, players and ball. With the mouse, you have complete control of player position, ball placement, ball speed and shots. Two people can play the same game over AppleTalk® or modem.

Superb graphics give Mac-Racquetball completely convincing realism. There are more than 1000 frames of ultra high speed digitized animation. It's one racquetball court that's always open when you're ready to play.

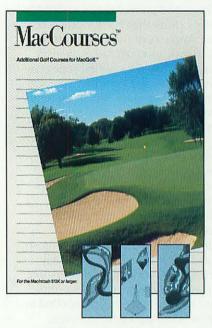


Enthusiastic players everywhere have made MacGolf the best selling Macintosh game ever.

MacGolf puts you in the picture, a full perspective 3-D simulation of realistic golf action. You match your skills against fairways, roughs, bunkers, water hazards, sand traps and trees.

MacGolf gives you a player's eye view of the course, in any direction, and an aerial overview of each hole. You have complete control of your position, ball placement, ball speed and direction, and selection of all 14 clubs. Digitized graphics and sounds add to the excitement.

MacGolf is so close to the real thing it will improve your golf game. And by the time you've reached the eighteenth hole you'll know you've been in a real contest.



When you have the best selling Macintosh game in the world, what do you do for an encore?

Here's new turf for adventurous MacGolfers. These are courses to conquer for mouse wielding pros who have taken the measure of the original MacGolf courses.

If you liked MacGolf, you'll love what MacCourses brings to the screen. Four new 18 hole, par 72 courses: Cedar Creek, Golden Sands, Thunder Ridge and PCAI International. The fairways, traps, hazards, and putting greens of MacCourses are in a whole new league.

If you thought MacGolf was good training for the outdoor game, MacCourses should turn you into a pro. Get MacCourses now, use it when you're ready—you never know when you'll need the challenge.



David Bunnell

Beyond that, even if Apple upgrades the Mac to the level of, say, a 68050 machine—which Motorola is talking a great deal about these days—it's not clear whether that in itself would give Apple the power edge it needs to stave off competition from the 386 machines or from Sun Microsystem's RISC-based workstations.

If Apple wants to stay competitive with the emerging leading-edge technologies, it will have to seriously explore these new technologies—the way Sun uses RISC architecture or IBM is delving into superconductivity.

Whether or not Apple has the foresight to do these things isn't clear yet. We know that Apple is working with RISC architecture in its labs, but does it have the marketing wisdom to implement that correctly in a consumer machine?

That will be the do-or-die test for Apple as it moves into the post-Macintosh era that Steve Jobs foresees.

1988 promises to be a year of tremendous technological and marketing upheaval in the Macintosh world. That process is already well underway. In the past few months alone, we've seen merger-mania reach a fever pitch with 15 major companies merging, among them Forethought and Microsoft; Think Technologies, Living Videotext, and Symantec; SuperMac and Levco; Ansa and Borland. Just as I predicted in an earlier column, last August, the Macintosh software business has indeed come to resemble the airline industry with its mergers and alliances.

Now we're seeing late arrivals from the IBM world into the Macintosh world as IBM PC vendors retool their products for the Mac. How are all these changes going to affect us? What vital difference or improvements will they bring to the Mac user? Or will they just muddy the waters?

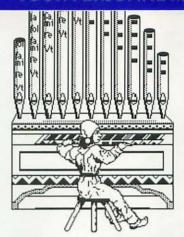
Do we really need software products like *dBase Mac* from Ashton-Tate? Isn't that a case of too little, too late, and who cares? Do we really need an explosion of graphics cards and monitors from Paleolithic PC peripheral makers who come lumbering into the market? Is our cozy little Macintosh neighborhood in danger of being swallowed up by corporate highrises?

We'll soon find out.

In the meantime, I'm still worried about how well Apple is doing. It makes me nervous because it's almost too good to be true. So if anybody out there knows where Apple's Achilles' heel is, please contact me right away. We really need to size up the situation. I'm desperate to find out. It's a real puzzle to me. And I need a solution.

PRACTICA MUSICA^M

YOUR PERSONAL MUSIC TUTOR.™. The Gift of Music



"I'm excited about Practica Musica...its truly interactive approach...makes using it enjoyable. ...a marvelous piece of software."

Michael Wesley, MacUser Magazine



PERISCOPE PRESS

P.O. 6926, Santa Barbara, CA 93160

Order Direct (toll-free, VISA or MASTERCARD accepted) 800-445-4866 • In CA: 800-445-8749 • Add 6% tax in CA. Dealer Inquiries Invited

Circle 784 on reader service card

Our Corporate Philosophy:



Remove the barriers between you and your work.

PowerStation™ is a Finder alternative that
lets you organize your work for fast and easy access
to applications and documents.





Compatible with MultiFinder. Suggested retail price \$59.95. Order from your favorite software retailer or call (800) 443-0100, ext. 451. This number is for credit card orders only. \$3.50 shipping/handling charge per order.



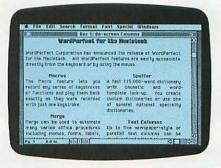
WordPerfect's new arrival that wasn't born yesterday.

WordPerfect for the Macintosh has just arrived, and with it comes a whole new era in word processing for the Mac.

Yes, it was a long time



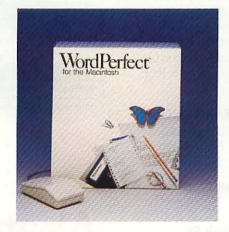
doesn't just drop from the skies. It takes time. Time to create a true Mac mouse interface that also has the built-in versatility of keystroke equivalents in main menus and submenus. Time to implement exclusive WordPerfect features such as on-screen text columns,





(Left) Create up to 24 on-screen text columns, with snaking or screen-writer column options. Put them anywhere in your document, any time you like. (Right) Store the tasks you do frequently—with no limit to number or size—and call them up instantly via mouse or simple keystroke commands.

automatic formatting, document compatibility, a fully integrated thesaurus, and a dictionary that's 115,000 words strong.



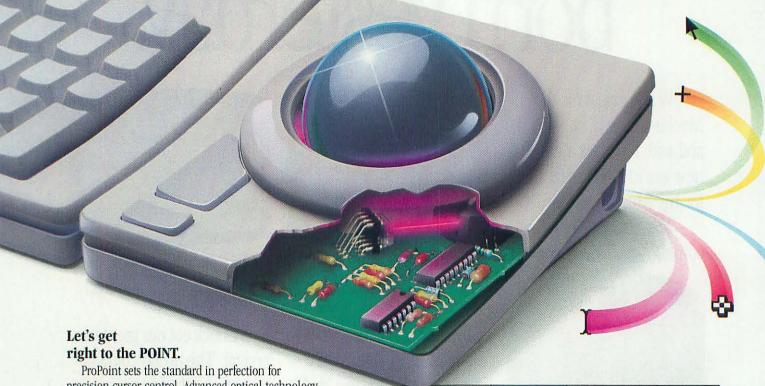
Check out our great new arrival. The proud culmination of painstaking research and responsiveness to user needs. The only serious word processing software that's truly fit for a Mac. For more information call or write WordPerfect Corp., 288 West Center St., Orem, Utah 84057 (801) 225-5000.

Word Perfect

WordPerfect for the Macintosh.

The POINT of Perfection!

Twice the Speed. Twice the Resolution.



ProPoint sets the standard in perfection for precision cursor control. Advanced optical technology and digital electronics make ProPoint the most reliable and accurate device available on the market.

Abaton's custom firmware delivers high resolution precision and the control needed with today's sophisticated desktop publishing and other design applications. At 200 counts per inch with built-in acceleration, the speed and accuracy of cursor placement is unrivaled.

ProPoint's ergonomic design complements the new Macintosh system profile. Productivity is dramatically increased (up to 60%) because it is always at your fingertips and your eyes never leave the screen.

The POINT of no return — LIFETIME GUARANTEE.

Abaton's patented technology and solid state design is so advanced and so reliable that we are backing ProPoint with a **lifetime guarantee.**

Abaton — commitment to perfection. ProPoint \$159.95

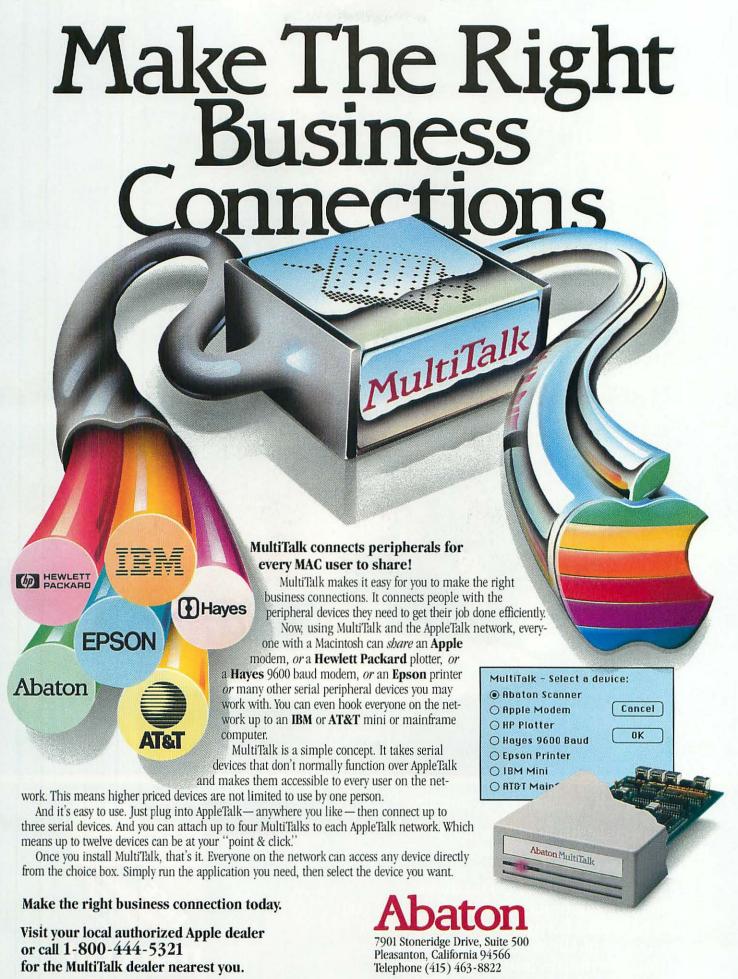
Pick up a ProPoint for your Macintosh SE, Macintosh II, or Apple IIGS at your local authorized Apple dealer or call 1-800-444-5321 for the ProPoint dealer nearest you.

	Abaton ProPoint	Kensington Turbo Mouse	Apple ADB Mouse Mechanical
Technology	Optical	Opti-Mechanical	
Precision	200 CPI	70 CPI	90 CPI
Digital Accuracy	Yes	Yes 🕘	No
Dual ADB Ports	Yes	Yes	No
Shift Lock Key	Yes	No	No
MTBF*	21.7 years	0.9 years	7.5 years
Guarantee/ Warranty	Lifetime Guarantee	90 day Warranty	90 day Warranty

*MTBF (Mean Time Between Failure)

Abaton

7901 Stoneridge Drive, Suite 500 Pleasanton, California 94566 Telephone (415) 463-8822



Apple, LaserWriter and AppleTalk are registered trademarks and Macintosh is a trademark of Apple Computer, Inc. Other brand names are trademarks or registered trademarks of their respective holders.



Give yourself a business advantage. Free.

It's a special edition of BusinessWeek's Business Advantage™ software, a \$50 value, free on the 11th disk in specially marked 10-packs of Maxell MF2-DD disks. This business simulation software puts you at the helm of Microsoft in its battle with other titans of the software industry. It's fun, informative and free at your favorite Maxell dealer, while supplies last.



Letters

A forum for Macworld readers

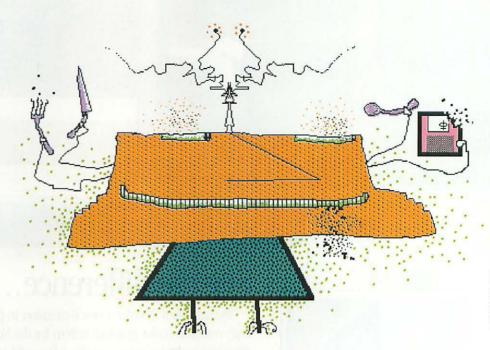
Bugs for Your Bucks

I'm tired of buying software that has not been fully tested and perfected. Invariably, developers say that bugs will be "fixed in the next release"—several months down the road. I wouldn't mind beta-testing a program, but I hate to pay for the privilege!

Ben Weinberg Sepulveda, California

Show Your True Colors

I found your article on Macintosh II video monitors helpful ["Chasing Rainbows," July 1987], but the photos comparing the Apple 13-inch and SuperMac 19-inch color monitors were misleading. While you report that the Apple monitor was superior, the photos lead to the opposite conclusion. This was probably due to photographing unequal-size screen displays and reducing



JID POVILAITIS

Corrections

The price of MiniCad version 3.0 (Updates, August 1987) was listed incorrectly; it actually sells for \$495.

The illustration of the 8-pin minicircular plug (Quick Tips, August 1987) for converting an ImageWriter cable for the IBM PC was misnumbered. The correct order of pin numbers is, from left to right: (top row) 8,7,6; (middle) 5,4,3; and (bottom) 2,1.

The address for Software Complement, maker of Client Mac ("Mastering Mail Merge," September 1987), is 8 Pennsylvania Ave., Matamoras, PA 18336.

Real Data, Inc. (Macworld Directory, September and October 1987) can be reached at 203/255-2732.

them to equal sizes for printing, which gives the SuperMac an apparent advantage. In the future, can't you show comparisons of actual-size windows as well?

John C. Beaver Grinnell, Iowa

According to Macworld's Senior Technical Editor, David Ushijima, another article on color monitors is in the works and will reflect true screen-display sizes, as you suggest.—Ed.

Talent Scores

Some of what Christopher Yavelow says about using computers in film scoring ["Top of the Charts," August 1987] reflects a misunderstanding of the process itself. To say that professional film scorers need "to precisely correlate synthesized or recorded music events with selected on-screen events" is to imply that creating film music is primarily a high-tech problem of synchronization. Nothing could be farther from the truth. Film scoring is a matter of

creative coordination; the music fits because it's written to do so. Without talent and sweat, your Mac will never work in this town again.

Ron Grant and Richard B. Grant Auricle Control Systems Sherman Oaks, California

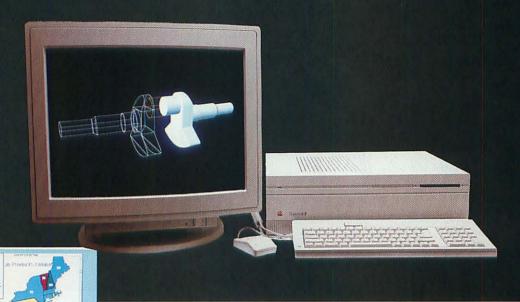
Christopher Yavelow replies that his article, designed to address the use of the Mac in synchronizing music with film, did not intend to make any claims about the creative process. He applauds artistic integrity but asserts that it was not the issue here.—Ed.

A Tricky System

I appreciated your tips on using desk accessories ["A DA in the Life," August 1987], especially on how to get to them directly

(continues)

The best color graphics system for the Macintosh II.



See the difference...know the reasons

You are about to enter a new dimension in personal computing with the PCPC II , a high resolution color graphics system for the Macintosh II. The PCPC II 19 inch monitor gives you a giant window into the color world of computer aided design, computer modeling, advertising, presentation graphics, desktop publishing and unlimited color applications. Designed for the most demanding professionals, the PCPC II provides the power and performance required to be your creative best.

Look at a PCPC II and experience the sharpest and most vivid colors possible. Witness a dazzling display of 256 colors from a palette of 16.8 million hues for the most realistic images possible. And for monochrome graphics, 256 shades of gray provide maximum detailing.

At PCPC, quality is an essential part of the design. Quality starts with state-of-the-art monolithic CMOS technology, Zip-pack video RAM for high reliability, and the lowest possible parts count to assure long life and trouble-free use. With 768K of video RAM, the PCPC II provides a resolution of 1024 x 768 with 8 bits per pixel. The non-interlaced display ensures an absolutely flicker-free screen and the sharpest picture imaginable. The high resolution monitor (previously found only on engineering workstations costing many thousands of dollars more) displays your work in its best light. The monitor's super fine pitch (0.31 mm) means you get incredible clarity. And for your personal comfort, the PCPC II features an anti-glare coating and a tilt-swivel base.

Now that you know the true colors of quality, don't compromise!



Personal Computer Peripherals Corp. 6204 Benjamin Road, Tampa, Florida 33634 (813) 884-3092 (800) 622-2888

(Quality and price are inseparable at Warp Nine.)

The Photon 20, 30, 40 and NEW 80 Our best selling products are 21, 31, 41 and 80Mb external SCSI hard drives. MacUser says "The Warp (Photon) 20 delivers excellent value" and "The support from the manufacturer was very good." Feb. '87.

- All drives are fan cooled moving air through the drive front to back, not out the bottom where it will reheat your drive, unlike our competition.
- · Auto head parking to insure that data is safe while transporting.

\$569.00 \$699.00 \$799.00 NEW! \$1379.00

Software Products.

LaserSprint-Laser spooler-\$59.95 PrintSprint-ImageWriter spooler-\$29.95 FullBack-Hard disk Backup-\$39.95 Software Bundles

- -LaserSprint/FullBack-\$79.95
- -PrintSprint/FullBack-\$39.95

Introducing Three New Internal Hard drives for the Mac SE.

Buy a Mac SE with two 800k floppies. Then install our internal hard drive in place of one of the 800k floppies. Takes 15 minutes. Gives you a hard and floppy drive for hundreds less than Apple. Features that Apple doesn't offer:

- · 4 shock mounts to absorb the bumps of everyday use.
- · Pushbutton SCSI addressing

P20i (20 Mb)-\$499.00*

P30i (30 Mb)-\$**649.00***

P45i (45 Mb)-\$899.00*

*This price includes a rebate of \$100.00 if you return the 800k floppy drive to us in our pre-supplied box. P20i, P30i and P45i without rebate \$599.00, \$749.00, \$999.00 respectively.

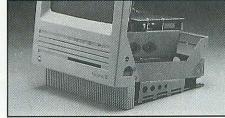


THE PHOTON 20, 30, 40 AND 80 Hard Drives





MAC II 50 AND 80Mb INTERNALS (The same drive Apple uses)



MAC SE INTERNAL HARD DRIVES

For 512k Owners.

All our hard drives and tape drives work with your 512k enhanced. Just add our easy to install Plusport SCSI port adapter. \$139.00

Photon 2001

The 2001 is a combination 20Mb hard drive/20Mb tape drive. MACazine said our tape backup "software is topnotch and simple to use, the benchmark times are very good and the drive is quiet.

Phaser 800

MacWorld described it as "So quiet it would be unobtrusive anywhere except a library on Friday night." (Nov. 86) Works with 128, 512, MacPlus, and SE.

Mac II 50 and 80Mb internal hard drives We use the same Quantum drive that Apple installs. Comes with everything you need to mount into your Mac II in less than five minutes. Why pay more for the same product?

\$949.00 \$1295.00

1 year Warranty. All Warp Nine products come standard with a one year warranty.

30 Days to love it guarantee: If in the first thirty days of owning your Warp product you are dissatisfied in any way send it back to us for a refund of the unit price.

EASY ORDERING. FAST DELIVERY

1-800-654-5294

In Minnesota (612) 426-9769



WARP NINE ENGINEERING

1751 W. County Road B. Suite 107, St. Paul, Minnesota 55113





when opening the Font/DA Mover. But a word of warning: If while holding down the Option key you open the Font/DA Mover in a System Folder other than the one from which the System is currently running, the new System becomes the active System. If you then go ahead and change the System DAs, you will find them missing when you go back to operating from the original System. You do have some warning that this has happened: because the Font/DA Mover opens with the fonts showing, it appears as if the Optionkey trick hasn't worked.

> Margaret Child San Francisco, California

Fun without Games

In addition to the reasons Steven Levy gives for the relatively poor market in Mac entertainment software ("Where are the Heavy Hitters?," July 1987), I suggest another: Macintosh users have so much fun with "serious" applications that we need to escape less often than do the drudges who

work on less friendly machines. Personally, when I sit down with some free time. I'm as likely to enjoy tinkering with graphics or a spreadsheet as with a game. The Mac's ease of use has blurred the traditional distinction between work and play-a phenomenon alien to the MS-DOS world.

> Peter McKnight Lynbrook, New York

E's of Use?

I enjoyed Steven Levy's "Ask Dr. Upgrade" (Macworld, August 1987), but it raised a worrisome question. I think I bought a Mac 512K Enhanced, but the machine doesn't have 512E on the back as the Doctor says it should. It seems to behave like an enhanced model, but how can I tell for sure?

> Tadashi I. Mizoguchi Riverdale, New York

If your Mac accepts double-sided, 800K disks, it has the enhanced ROM upgrade; if it also has the SCSI printer port on the back, which is round, not rectangular, and requires a different cable than the Mac 128K and the 512K, it has the Mac Plus upgrade.-Ed.

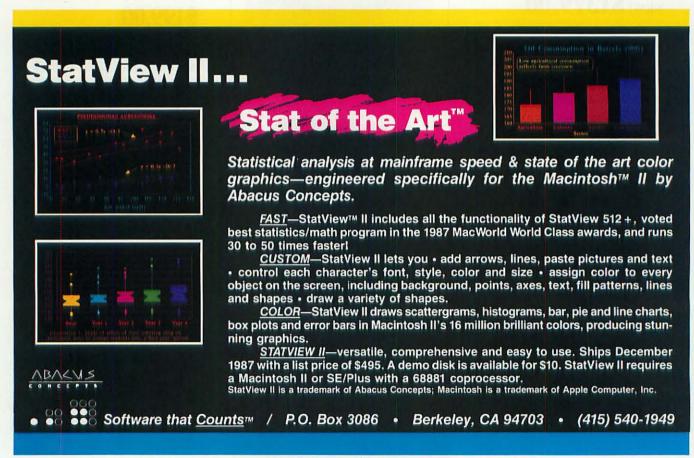
Graphics Not Included

I recently purchased Doug Clapp's Word Tools, and though it is powerful, I feel burned. Although the program claims to support Microsoft Word, it doesn't work with version 3.0-not even text-only 3.0 files. Nor can it handle text with graphics. Aegis says they have no plans to add this basic Macintosh capability. I wish I had taken less for granted.

> Frank L. Jaubert III Houston, Texas

In response to suggestions from users, Aegis is now working to add text/graphics capability to the next release of Word Tools (due early next year), although they assume that most users normally edit text with the program before getting to the point of saving text with graphics. Aegis also reports that the program can save Word text files from any version and that compatibility with version 3.01 is being added to the update as well.-Ed.

(continues)





ntroducing the PostScript laser printer that blacks out at high speeds.

The new QMS-PS* 810 can compose and print the most complex pages in record times, with richer, more saturated blacks than ever before. All with the desktop publishing power of Adobe PostScript*, and the superior print know-how of QMS, an industry leader.

Under the hood QMS ASAP™ (Advanced System Architecture for PostScript) is proprietary technology that helps eliminate the hardware bottlenecks that hinder other PostScript printers. As a result, QMS-PS 810 boasts processing speeds remarkably faster than other PostScript printers in its class. And faster output means greater productivity. In addition, the QMS-PS 810 laser

printer's new Canon* SX* print engine covers solid areas and prints fine detail better than previousgeneration engines. Fast start, strong finish You can adorn your documents with one or all of the 35 Adobe typefaces. Thanks to PostScript, there's an infinite number of font variations available. You can also make type as large or as small as you want. And put it anywhere on the page. In fact, with PostScript you enjoy total control over the design of your page. It gives you the complete desktop publishing power to do things that would otherwise be virtually impossible. So you get high-quality output exactly how you want it.

Along with PostScript, the HP LaserJet+

Diablo 630 and HP-GL™ printer emulations are added for your non-PostScript software.

The QMS-PS 810 laser printer is easy to use, maintain, and comes with a one-year warranty. It's available from Laser Connection dealers. Laser Connection is a sales and marketing subsidiary of QMS. For the dealer nearest you call **1-800-523-2696**.

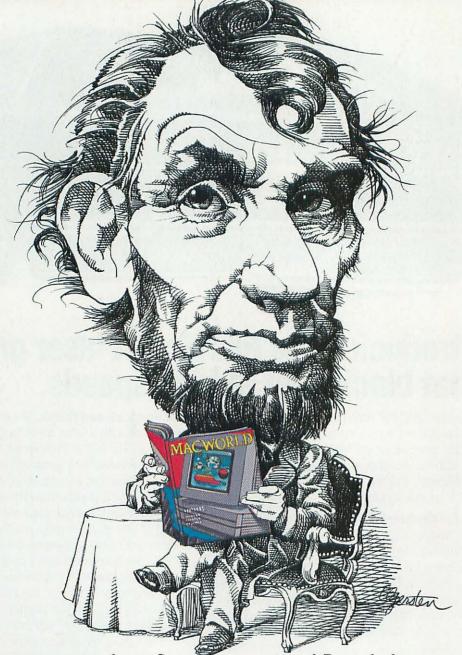


A QMS company

The following are trademarks of their respective companies: QMS, QMS-PS, ASAP, Laser Connection of QMS, Inc. PostScript of Adobe Systems, Inc. Canon, Canon SX of Canon, U.S.A. LaserJet + , HP-GL of Hewlett-Packard. Diablo of Xerox Corp.



Not all reviews are created equal.



ome reviews are press releases. Some are synopses. Some are just paragraphs or rating symbols that can't possibly tell you enough. MACWORLD gives you in-depth reviews. Comparative. Analytic. Selective. Solutions-

oriented. Precisely the ones you want.

Month after month, our experts work programs thoroughly to give you the information you need to make intelligent, productive choices. MACWORLD, The Macintosh™ Magazine.

MACWORLD GIVES YOU MORE.



SUBSCRIBE NOW! SAVE \$23.40 OFF THE ANNUAL COVER PRICE

Limited-time offer! Take advantage of Special Savings Call TOLL FREE 800/524-3200 Visa and MasterCard Accepted

More for less. Honest.

YES, send me one year (12 monthly issues) of MACWORLD for only \$24. That's nearly 50% off the annual cover price of \$47.40 and \$6.00 off the regular subscription rate of \$30.00.

SAVE EVEN MORE. Payment enclosed	□ \$37.90 for 2 years (24 □ Bill me later	monthly issues)
NAME		
COMPANY		
TITLE		
ADDRESS		
CITY	STATE	ZIP
Please allow 6 to 8 weeks for delivery of	your first issue. Offer good in the U.S. only.	

MACWORLD

4BPA

More for less. Honest.

YES, send me one year (12 monthly issues) of MACWORLD for only \$24. That's nearly 50% off the annual cover price of \$47.40 and \$6.00 off the regular subscription rate of \$30.00.

SAVE EVEN MORE. □ Payment enclosed	□ \$37.90 for 2 years (24 □ Bill me later	monthly issues)
NAME		
COMPANY		
TITLE		
ADDRESS		
CITY	STATE	ZIP

Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

MACWORLD



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld Subscription Department P.O. Box 51666 Boulder, Colorado 80321-1666 NO POSTAGE NECESSARY IF MAILED IN UNITED STATES





NO POSTAGE NECESSARY IF MAILED IN UNITED STATES

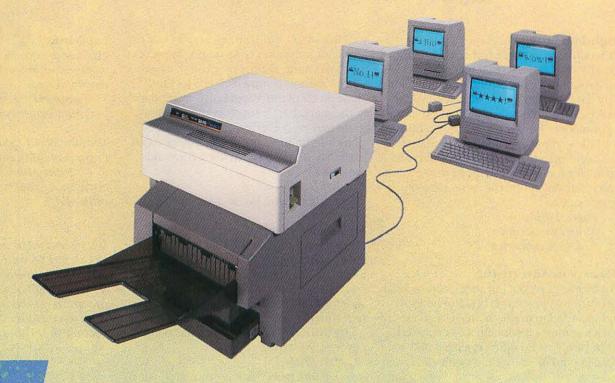
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld Subscription Department P.O. Box 51666 Boulder, Colorado 80321-1666





he PostScript laser printer sure to get high ratings at its network debut.

The new 8-page/minute QMS-PS 800 II laser printer The QMS-PS* 800 II is an 8-page-per-minute laser printer that combines the desktop publishing power of Adobe PostScript* with the superior printer technology of QMS, a leader in printer technology for 10 years. Exceptional paper handling, faster processing speed and a Canon* CXD* print engine with 10,000-page-per-month duty cycle give QMS-PS 800 II the versatility your Macintosh** network needs.

A network sensation QMS-PS 800 II holds 500 pages, so operators aren't constantly refilling depleted paper trays. Users can even designate automatic switching between the two trays for doing letterhead/second page printing. Select faceup or facedown collation. And manually feed odd-sized paper stock.

With QMS ASAP™ (Advanced System Architecture for PostScript) proprietary technology, QMS-PS 800 II delivers outstanding performance. In fact, the more complex the page, the more it outperforms other Post-Script printers. Two megabytes of memory, expandable to three megabytes, also add to the overall page processing speed when you are creating complex documents.

Type casting The QMS-PS 800 II comes with 35 resident typefaces (you can download more if you like). PostScript allows you to scale type to virtually any size, from minuscule to mammoth. PostScript also enables you to design, and redesign, your documents with exacting detail. You have total control over the final appearance of documents, with the ability to place text and graphics anywhere on the page. In short, you get the complete desktop publishing power that only PostScript can give you.

Critical acclaim The QMS-PS 800 II is certain to receive rave reviews on your network. And for a single-user set-up, there's the QMS-PS 810 laser printer. For a demonstration of either, call **1-800-523-2696** for the location of the Laser Connection dealer nearest you. And be sure to ask for *The Sourcebook*™ – our exclusive catalog filled with the latest laser printer products and enhancements.



A QMS' Company

The following are trademarks of their respective companies: QMS, QMS-PS, ASAP, Laser Connection of QMS, Inc. Macintosh of Apple Computer, Inc. PostScript of Adobe Systems, Inc. Canon, Canon CXD of Canon, U.S.A.

Letters

High-End Ethics

We would like to publicly thank Alcoa for the \$1200 shareware fee it recently paid for our programs DiskInfo and miniWriter. It is the largest such fee we have received in two years, and the only one from a major corporation. There is practically nothing our little company could have done if Alcoa had decided to use our products without paying for them. It is gratifying to see a large company refute the stereotype of heartlessness.

> Forrest Johnson Maitreya Design Goleta, California

Honesty in Advertising

In a couple of recent instances, commercial software was posted on bulletin boards and included in public domain or shareware libraries; presumably it was passed on by people who didn't realize it had been copied illegally. Neither product was

well known, nor did either carry a clear internal identification of its origin. To prevent this happening again, I propose that both shareware and commercial vendors include an ID in the About box that appears in the menu bar, stating whether the program may be copied or distributed electronically. In this way, BBS operators could learn when they have an illicit copy and remove it.

Jeff Hecht Auburndale, Massachusetts

My Enemy's Face

I was shocked to see the IBM PC on the cover of the August 1987 issue of Macworld. It has been a long, difficult fight to convince an IBM world that the Mac is a viable tool. While cooperation between the two systems undoubtedly is needed, this is going too far. Would you put a Mac on the cover of PC World?

> I. T. Buck Farmington, Michigan

Great idea-we'll pass it on to the editors next door.-Ed.

Expo Info

I have some questions about the next Macworld Expo, in San Francisco. What are the dates and costs?

> Samuel L. Sharber III Machesney Park, Illinois

The Macworld Expo will be held at San Francisco's Moscone Center, January 14 to 17, 1988. Admission: \$40 for conferences and exhibits, \$15 for exhibits only.-Ed. □

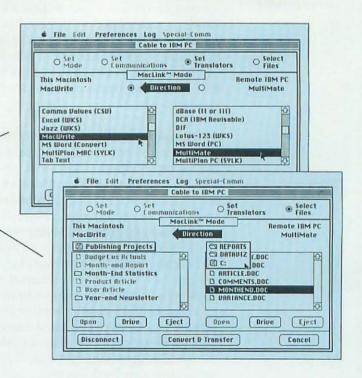
Letters should be mailed to Letters, Macworld, 501 Second St., San Francisco, CA 94107, or sent electronically to Compu-Serve 70370,702 or The Source BCW440. Include a return address. We reserve the right to edit letters. All published letters become the property of Macworld.

MacLink Plus ... Connectivity to the IBM PC plus ...

- Its a complete "kit" for exchanging files between the Macintosh and the IBM PC (and compatibles)
- Connects to the PC's serial port using modems or the included cable . . . or over AppleTalk when used with a Server or Network Product
- Contains an extensive library of translators to convert word processing formats, spreadsheets and data base information
- Full visibility into remote disks and directories
- TTY terminal emulator for general communications
- \$195 includes Macintosh software, PC software, built-in translators, manual and cable
- Wang and NBI options available

DataViz Inc.

16 Winfield St. . Norwalk, CT 06855 . 203-866-4944





guide to the care and feeding of your laser printer.

Get the best advice on the care of your laser printer from Laser Connection—one of the world's leading suppliers of laser printers and desktop publishing accessories. Our dealers carry many of the latest products that enhance the value and productivity of your printer.

Feeding time Decrease your laser printer's daily feedings with the PaperPlus 500™ sheet feeder. Its greater

paper handling capacity increases the continuous operation of your printer from 121/2 minutes to one hour, leaving your office

modate a varied diet of envelopes and letter-size paper, and is compatible with all Canon* CX* laser printers, including the QMS-PS* 800+, Apple* LaserWriter[™], and the

staff to more important work than feeding the printer. The PaperPlus 500 can accom-

HP® LaserJet™

Scan this The IS-300™ sheet-fed scanner transfers any text, illustration, art, or photograph into your computer. You then have full control to manipulate the entire image with your PC and software. Combine scanned images with text to create reports and newsletters. You save time. get graphics flexibility, and increase your desktop publishing power. The IS-300 scanner is compact, lightweight, and works with an IBM* PC/XT/AT, PC compatible, or an Apple Macintosh™.

Colorful language Besides basic black, Laser Connection offers toner cartridges with blue and brown toner. Our dense, highquality toner insures full, even coverage in

whatever color you choose. And our toner cartridges work with any laser printer that uses a Canon CX print engine.



A valuable alternative Don't trash your laser printer's empty toner cartridge. Refill and recondition it with the Laser Connection's Toner Refill Certificate Program. You'll save about half the cost of a new toner cartridge. And while other programs can promise savings, they lack the expertise of Laser Connection.

Expertise that guarantees you quality. Each reconditioned cartridge is refilled with more toner than it started with. So you save money, and you get a cartridge that lasts longer, satisfaction guaranteed, or we'll give you a free replacement certificate. Only at participating Laser Connection dealers.



Call 1-800-523-2696 for the Laser Connection dealer nearest you. And be sure to ask for The Sourcebook™—our exclusive catalog filled with the latest laser printer products and enhancements.



A QMS' Company

IS-300 Sheet-Fed Scanner

PaperPlus 500

Sheet Feeder

The following are trademarks of their respective companies: QMS-PS, Laser Connection of QMS-PS, Laser connection or QMS, Inc. Canon, Canon CX of Canon USA, Inc. Apple, LaserWriter, Macintosh of Apple Computer, Inc. HP and LaserJet of Hewlett-Packard. IBM PCXT/AT of Internation-al Business Machines Corp.

© 1987 Laser Connection.

Now that there's an IRMA put your old ideas about m

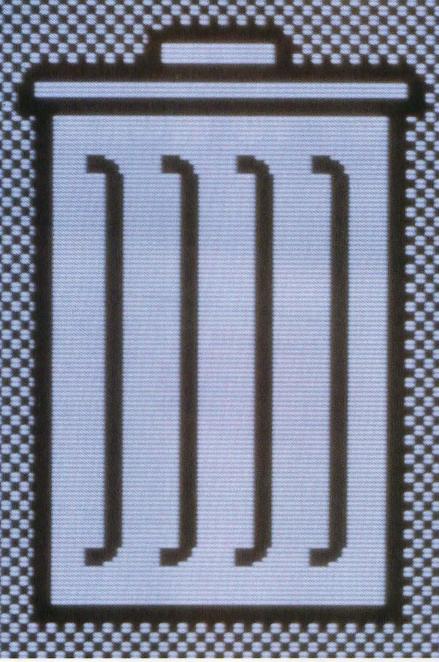
PC Coordinators have been debating the viability of Macintosh[™]-to-mainframe links for a couple of years now. With opinions varying from impeccable to impossible.

But no matter what ideas you might have on the subject, they are now old ideas.

Because DCA has introduced MacIRMA. And all the reliability and ease of use that

made IRMA™the PC-to-mainframe industry standard has come to the Macintosh II™and Macintosh SE.™

How does that help you? Well, MacIRMA can support the DCA and IBM*mainframe file transfer software that you probably already have installed in TSO, CMS and CICS environments. Allowing you to actually offer



for the Macintosh, you can ainframe links in their place.

your users a choice of either Macintosh or IBM microcomputers while maintaining consistent 3270 connectivity.

And you can offer the same training and support to each of them regardless of which microcomputer they choose.

What's more, MacIRMA's 3270 emulation software is a true Macintosh application.

It works with a "mouse," pull-down menus, is compatible with Switcher™ and Multifinder™ programs, and supports "copy-and-paste" to incorporate mainframe data into word processing or spreadsheets.

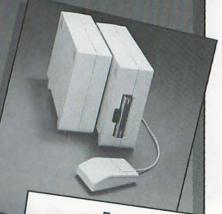
processing or spreadsheets.
And that's just for starters. For the whole story, call DCA, toll-free, at 1-800-241-IRMA, ext. 535.

"SIMPLY PUT, CIRRUS DRIVE ARE A JOY TO WORK WITH." "These are powerful drives with powerful software."

"Using Cirrus drives gave us an appreciation of the importance of ergonomic design to performance.'

"Cirrus drives are quiet and easy to work with...a plus to their performance rating."

"Very small and lightweight, (Cirrus drives) are constructed of quality materials designed to last."



From

SLOT MACHINE 20, 30, 40, 60 20-60 Mbyte internal Mac SE hard disks

CIRRUS 20, 30, 40, 60 20-60 Mbyte Mac external hard disks

CIRRUS 40T 40 Mbyte tape backup

Systems include drive, cable, software and manual.

and MasterCard accepted.

"The Cirrus drives have the most exciting, simple and elegant design we have seen in a hard drive for the Macintosh."

The Macintosh Journal

The Macintosh Journal

Cirrus Drives

The Cirrus drives are exciting and excellent performers. They offer impressive speed, flexible software, attractive design and quiet operation.

Ease of Use

Running a Cirrus drive is very simple. It is just a matter of plugging the drive in and turning it on. The drives come pre-formatted and ready to go. The Cirrus has two DB 25 connecters on its case, so its cables are easier to work with than the "standard" SCSI cables that come with some drives. The design of the Cirrus drives contributes greatly to their ease of use.

The software that comes with the Cirrus drives is very flexible. It follows the Macintosh interface closely, and is well done. With the software, users can partition the drives into several volumes, or combine several drives into one single volume. Volume sizes can be changed or new ones added at any time without losing data, Password protection, manual or automatic mounting, automatic head parking, backup utilities, and disk repair utilities are all standard. In addition, the software performs several diagnostic tests including the ability to map out bad sectors and program the drive's interleave. In short, this is some of the most extensive and best written software available for Mac hard drives.

Most of the Cirrus' flexibility comes from their excellent software. However, the physical construction of the drives also contribute to their superior flexibility. Unlike other drives for the Mac, Cirrus drives can be placed vertically or stacked horizontally depending on your desktop requirements.

Performance

Cirrus drives were engineered to perform well in everyday situations. These drives are very fast when performing common operations such as going to the chooser or building the desktop. Reading and writing to and from files is also very fast. Using the Cirrus drives gave us an

appreciation of the importance of ergonomic design to performance. For instance, fan noise can increase fatigue in office workers. A drive that is built to be quiet and easy to work with may not increase the data transfer rate, but it will help to get more productivity out of the user. Cirrus drives are quiet and easy to work with which we consider to be a plus in their performance rating.

Because the Cirrus software is so good, users may want to use it to initialize drives from different manufacturers. In our tests, this worked well, and allowed drives of differing origin to be linked together as one volume. Since many of the older SCSI drives came with poor software, this is a good argument for buying a Cirrus drive and chaining it with other drives after they have been initialized with the Cirrus software.

Design and Construction

The Cirrus drives, though very small and lightweight, (about 4 lbs.), are constructed of quality materials designed to last. Their light weight is due to the small number of components in each drive and to their plastic case. The Cirrus drive is both sturdy and durable; the internal power supply is encased in aluminum, and the drives are shock mounted on rubber bearings.

The Cirrus drives have the most exciting, simple and elegant design we have seen in a hard drive for the Macintosh. The modular construction of the drives means that any repair work will be quick and easy. Simply put, Cirrus drives are a joy to work with.

Recommendations

Cirrus drives were designed for the the professional user. They were not engineered to be low cost products, or to be "just adequate performers;" they are built with premium components. These are powerful drives with powerful software. Cirrus drives are an excellent solution for users who demand a lot. Readers should also note that several new products are in the pipeline and that a 40MB tape backup and 30MB hard drive are currently available. We give the Cirrus 20, 40 and 60 drives an excellent rating (8 on a scale of 10) and recommend that other drive manufacturers follow the Cirrus example, and design drives that are simple, elegant and impressive performers. -Michael Day

© B and P Publishing

s a trademark of Citrus Development Corporation, Macintosh is a trademark of Apple Computers. Prices and specifications subject to detail are cash prices. Mouse not included, Excerpts reprinted with permission of Mac Journal.





Caveat Emptor

Mail-order problems continue

Not far from Beverly Hills' Rodeo Drive sits a stucco building, not very different from many in southern California. This one, however, used to be the home of Compusystems—the latest and perhaps most successful of those companies that have taken hundreds of thousands of dollars from thousands of customers under the false pretense of supplying them with discount computer products by mail order.

How could that happen? Easy. Any company that passes a credit check will be accepted by most magazines as an advertiser. By the time we find out there's a problem, the scam perpetrators may be long gone, leaving nothing but—like Compusystems—windows covered with newspapers, and a lot of angry customers and magazines.

Nor are fly-by-night con artists the only source of mail-order consternation. Many of the problems are caused by dealers that get caught up in a vicious cycle of cost-cutting and cash shortages. They're companies struggling to stay alive.

Does that mean that our readers should not buy from mail-order vendors? No. But it does suggest that we should exercise caution in our purchases. There are a number of warning signs that indicate the likelihood of problems with a vendor: it doesn't accept Visa or MasterCard; it does accept payment for products that it may not be able to send out within a reasonable time (the Postmaster says this is four weeks); or it doesn't provide the purchaser with information about missing products or partial shipments.

Three exemplary vendors stand out: MacConnection, Programs Plus, and Tussey Computer Products. Buried in the fine print of their advertisements is a one-line statement that seems to make all the difference in the world: We do not charge until products are shipped. I recommend that you do not purchase products from a vendor that doesn't follow this policy. If you ignore this advice, you may join the 200-plus readers who have written to tell us of the problems they have had with mail-order purchases. The reasons behind all of this are explained in Jeff Chester's article in this issue, "What's Wrong with Mail Order?"

Macworld has waged a year-long campaign in behalf of our readers on this account. In February of this year, I pointed out in this column the problems with one particularly troublesome vendor, Northeastern Software, a company that filed for bankruptcy. We decided to identify a common cause of readers' trouble, even though Northeastern was a major advertiser in our own magazines.

MCC Macraba

MACCABA

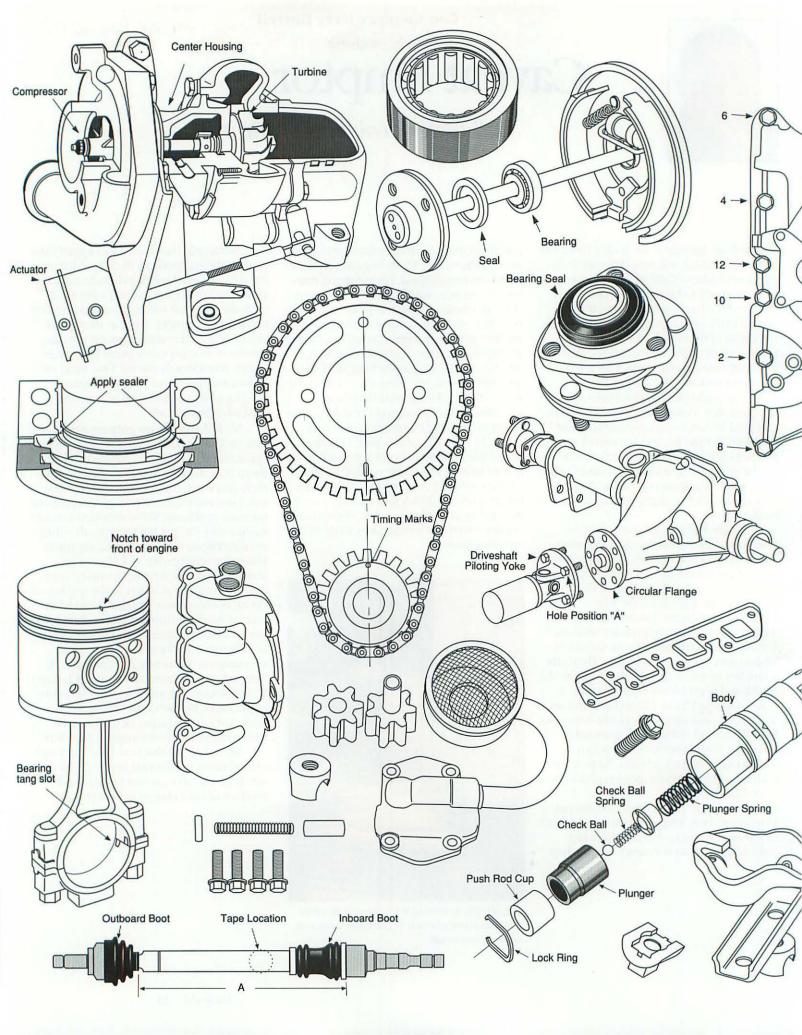
David Beffa Negrini of MacConnection, which made its name as much by customer service as by its eccentric ads.

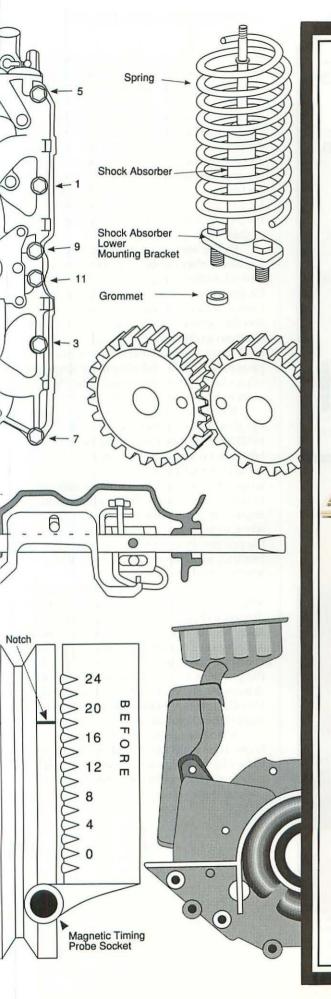
Macworld has taken a lot of grief from our worthy competitors in the publishing industry—basically cheap shots from magazines that are willing to accept the advertisements, but not willing to take a stand on behalf of consumers. Print, as they say, is cheap. When ad revenues are on the line, the din from competing publications becomes considerably muted. Our stand on Northeastern left our parent company holding well over \$100,000 in unrecovered advertising costs.

We followed up my column with an article by Macworld Associate Editor Nancy Dunn that made specific recommendations about how to avoid being burned by swindlers and what to do once stung. The result: even more letters from readers recounting their problems. We've received a steady stream over the last ten months, all telling us of problems with mail-order suppliers and other vendors. We've followed up, sending copies of your letters to the companies; using our position in the market on behalf of consumers who have had little success working through Postmasters, consumer advocacy groups, and Better Business Bureaus. In some cases we've had encouraging responses. For example, PC Network sought protection under Chapter 11, but responded when we intervened for our readers. Before its May filing, PC Network had satisfied some of the readers who complained about missing products.

We culminate this year-long campaign of mail-order monitoring with Jeff Chester's article and a call to action for mail-order vendors: do not charge unless you are

(continues)





The art of Adobe Illustrator.

Adobe Illustrator is the most powerful illustration program you can buy for producing high quality art of all kinds.

It lets you draw with precise lines and curves instead of pixels.

Yet you don't have to know how to draw to use it.

Besides working freehand, Adobe Illustrator lets you and your Macintosh Plus, SE or II *trace* over all kinds of already-made art: blueprints, photos, logotypes, roughs, scrap art, even files from MacPaint and compatible software.

You can also scale, rotate, add type, combine one image with another, share images with other users, or paste images into the most popular page make-up systems.

Adobe Illustrator also automates art production. So you can get camera ready art at your desk.

Make radical changes and get new art in minutes.

And keep every image in small electronic "art files" you can

recall, refine, combine or change at will.

Adobe Illustrator is based on POSTSCRIPT,* the language of desktop publishing. Which means you can get output on any POSTSCRIPT-equipped printer from a 300-dpi laser printer to a 2500-dpi typesetter.

Call us at (800) 29-ADOBE, (800) 85-ADOBE in California,

or (415) 961-4400 from Canada. We'll tell you where you can see, and buy, the Adobe Illustrator.

That way, the next time you have to draw a transmission, it'll be automatic.



Now a work of art doesn't have to be a lot of work.

Illustrator

Adobe Illustrator is a trademark and POSTSCRIPT is a registered trademark of Adobe Systems Incorporated. Other brand or product names are trademarks or registered trademarks of their respective holders. © 1987 Adobe Systems Incorporated, 1585 Charleston Rd. Mountain View. CA 94039-7900.

VOD3E

Solve Mac problems like an expert!

"Ist Aid Kit™ falls into that special category of 'must-have' products' (MACazine, April '87). It lets you handle every Mac problem from difficulties copying files, printing, and using AppleTalk networks, to recovering lost data from deleted or damaged files and unreadable disks.

Acclaimed by novice and expert alike, the 1stAid Kit is much more than powerful software. At its core is a clearly written reference manual that:

- lists every imaginable error condition
- helps you quickly track down solutions to any problem
- takes you step-by-step through each recovery effort
- shows you how to avoid problems

Macintosh is a trademark of Apple Computer, Inc.

"The definitive product for troubleshooting on the Macintosh"" (Macworld, April '87). It "stand[s] head and shoulders above any other product like it . . . I can't recommend 1st Aid Kit strongly enough" (MACazine, April '87).

1stAid Kit \$99.95

HFS Version: MacPlus, Mac SE, Mac II MFS Version: 128KMac, 512K Mac, MacXL

Available direct order 24 hrs.

1-800-THE-FIXR In MA 617-847-4190

VISA & MC accepted, \$5 s/h UPS ground, in MA add 5% tax

Not copy protected

Dealer inquiries welcome



42 Radnor Road, Boston, MA 02135

Circle 628 on reader service card



*Offer good with purchase of either Ferrari Grand Prix or Fokker Triplane Flight Simulator. For coupon and details, see our display at your nearest Apple dealer or favorite software source.

Circle 594 on reader service card

Commentary/Jerry Borrell

able to ship. We also suggest that the Direct Marketing Association in New York institute a "certification" program: a self-policing program for fiscal soundness which would let consumers know that a given vendor meets some minimal requirements of solvency and performance. Any recommendation for action by Federal authorities seems futile in an era when even life-endangering situations (air traffic control, for instance) go unattended; some states have encouraged us by enacting legislation of their own.

By the way, we've also taken a lot of flak from other publications because we have identified companies that enter into Chapter 11 protection. We think this is our responsibility—letting you know that you should consider carefully before purchasing from a company that can take shelter in its Chapter 11 status, thereby avoiding repayment, warranty fulfillment, or shipment of product. You might consider the 15,000 outstanding customers of PC Network.

When we in the press cover problems like this, we ask ourselves, where do we fit in? Do we, by reporting on economic troubles that a company has, increase the likelihood that it will fail? In many cases the answer is yes. But if we withhold information from our readers that might have an impact on companies, how do we decide when to make our readers aware? Once the companies enter Chapter 11? Just before they go Chapter 11? After ten reader letters? One hundred?

Our answer is to print the information when we know it; in some cases this causes distress to both consumer and vendor alike. It's like cursing when you encounter a detour on a road that has a large pothole. Everyone has to go out of the way to avoid the problem. Our only alternative is to let drivers use the road and then let them try to collect money from some local government if they break an axle.

So in fairness we report what we know, after it has been verified. We attempt to be objective, not sensationalist; candid, not clever; and compassionate where compassion is due.

TRACK PROJECTS. CAPTURE CASH. NO SWEAT.

If you bill for your services by the hour, you need TIMESLIPS® III

Without a good time and billing system, your business isn't collecting all the money it's earned. You have to manage the billing process by tracking your expenses and accounts receivables. You need to know who is being billed and why.

Automatically Tracks Time And

Expenses. TIMESLIPS* III gives you faster, more accurate billing, recovering cash that could have fallen through the cracks.

Works Like A Desk Accessory.

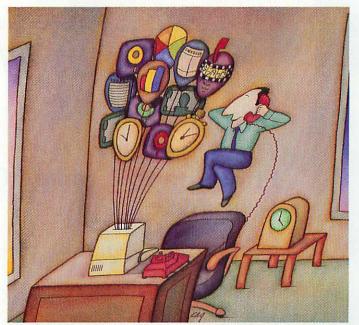
TIMESLIPS III runs concurrently with other programs, and can be called up whenever you need it.

A built-in "stopwatch" times any phone call or activity as you work. Then automatically calculates the total fee and updates your client file. Instantly.

A unique "dollar clock" can appear in the corner of your screen to keep a running tab of time and billable dollars.

Understands Your Needs. Unlike other billing systems, TIMESLIPS III allows for *real-time* entry of expenses information while within another program.

Like time and billing systems costing lots more, it provides expanded description on each timeslip. It exports data to virtually any program that accepts tab-delimited files, such as Excel,™ Jazz,™ and Microsoft Works.™



© 1987. North Edge Software Corp. All Rights Reserved.

timeslips III

Generates Custom Bills And Reports.

With over 5,000 ways to create a bill, you can satisfy any client demand, or meet any office need.

TIMESLIPS III generates transaction reports, client history, aged receivables, and management reports.

Tables, bar graphs, pie-charts, easy-on-the-eye formats leap to the screen, giving you masterful control and analysis capabilities. Information, intelligently organized so you don't have to be.

TIMESLIPS III Is A Productivity Tool.

It gives you a clear picture of your business: an activity-by-activity breakdown for each project. What was accomplished. How long it took. And the actual fee.

You Probably Can't Outgrow TIMESLIPS III. It lets 250 of your colleagues handle 2,000 clients, with up to 128 projects per

client. And track all simultaneously.

30-Day Money-Back Guarantee.

If you're not happy, we'll return your money.* In the meantime, you'll find our level of technical support virtually unparalleled.

Send for TIMESLIPS III. It's one of the most powerful, yet easy to use time and billing systems ever offered. Compare it to any other, at any price.

CALL TOLL-FREE 1-800-225-5669

For rush service or technical information, call 617-468-7358.

□ Please rush me TIMESLIPS III at \$199 plus \$7.00 s/h.	copies of 9.95
For a total of \$ (Mass. residents add 5% s	ales tax.)
☐ Enclosed is my check.	
☐ Please charge my Visa _	M/C
Card No	
Exp	
Name	
Company	
Address	
City	_ State
Zip Tel. ()	
	MAC1287

System Requirements: 512K Macintosh Computer. *If purchased directly from

North Edge Software Corp.



TIMESLIPS III is a trademark of North Edge Sofware, Inc. Excel is a trademark of Microsolt. Jazz is a trademark of Lotus Development Corp. Microsoft Works is a trademark of Microsoft.

Beyond words.

Introducing

The Big Picture IQ™

Photographic Image Quality

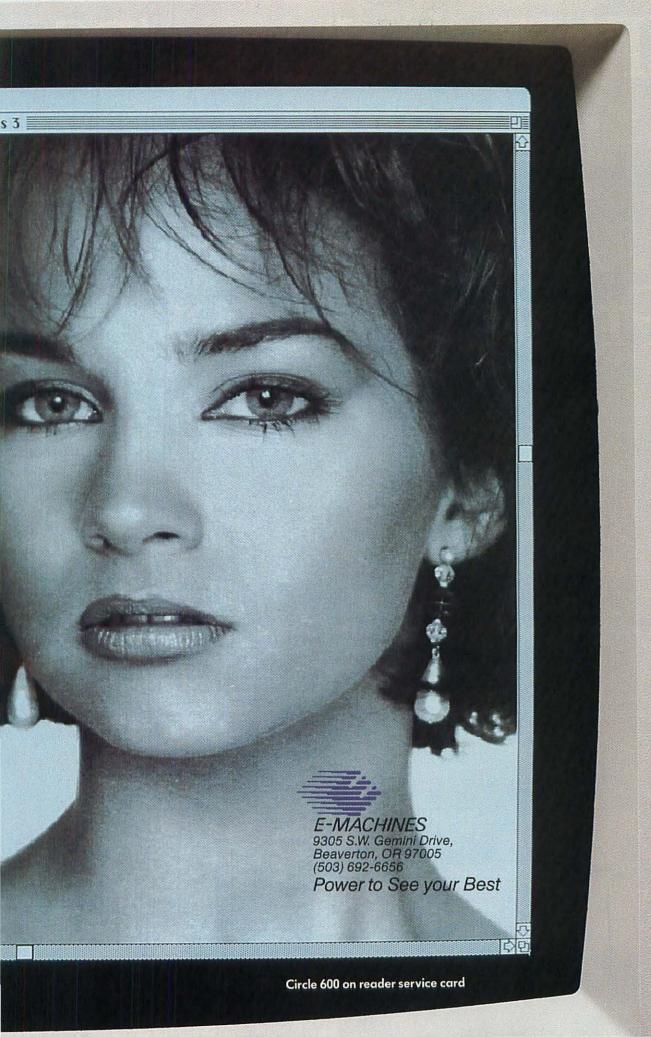
Grey Scale Monitor

The Big Picture IQ shows your publication on the screen, with high-resolution images in place, ready for printing.

Yet, The Big Picture IQ can still give you the words with all the crispness and contrast of a fine monochrome monitor, and at a price that's thousands less than large screen color displays.

Oreative people have dreamed of this moment. Now it's here. See *The Big Picture IQ* for the Macintosh II at your E-Machines dealer today. It's beyond words.





AST's TurboLaser/PS

At \$3995 It's Almost Like Printing Money

If you're serious about high-quality printing, and you're just as serious about your checkbook, AST has the printer for you.

Our new AST TurboLaser/PS with PostScript* For only \$3995. That's right. For hundreds of dollars less than Apple's LaserWriter* Plus, you can have a PostScript printer with more memory, 35 resident fonts, a longer life span and more printing speed and power than what you've been used to.

There's more. In addition to its AppleIalk™ port, the AST TurboLaser/PS has built-in serial and Centronics parallel ports. That means you can take advantage of the

same versatile and powerful printing features with either a Mac* or an IBM* PC or PS/2™

The AST TurboLaser/PS. PostScript power at this price is almost like printing money.

Call AST today for more information on PostScript and the AST TurboLaser/PS. The number is (714) 553-0340; BBS (714) 660-9175; FAX (714) 660-8063.



AST, AST logo and AST TurboLaser registered trademarks of AST Research, Inc. Macintosh, AppleTalk trademarks and Mac and LaserWriter registered trademarks of Apple Computer Inc. PostScript registered and Adobe trademark of Adobe Systems, Inc. IBM and PS/2 registered trademarks of International Business Machines, Inc. Copyright © 1987 AST Research, Inc. All rights reserved.

Circle 463 on reader service card

ADOBE

POSTSCRIPT

TurboLaser/PS

Contributors Notes

Jeff Chester ("What's Wrong with Mail Order?") is an investigative reporter whose work has appeared on the Public Broadcasting System, on National Public Radio, and in publications such as The Nation, the San Francisco Chronicle, and the Oakland Tribune. He is also a producer for the "MacNeil-Lebrer NewsHour." His specialty is computer-related fraud and crime.

Robert C. Eckhardt ('Inside Outliners") is a Macworld contributing editor and the author of Free (and Almost Free) Software for the Macintosh, published by Crown, and The Fully Powered Macintosh, forthcoming from Brady.

Danny Goodman ("Business Clinic") is a contributing editor of Macworld, the author of ten computer books, including The Complete HyperCard Handbook, published recently by Bantam Books, and the creator of the stackware programs Business Class and HyperDesk.

Jim Heid ("Getting Started with Post-Script") is a contributing editor of Macworld. Each month be turns his attention to a different topic on Mac fundamentals. He is the author of dBase Mac in Business, published this year by Ashton-Tate Publishing.

Prasad Kaipa ("The Disk Shopper's Guide to Storage") is an assistant professor of radiobiology at the University of Utah, where he has been researching the effects of radiation fallout. He consults on Mac application programs through his firm, MacWiz Consulting.

Steven Levy ("Why I Use What I Use" and "The Game Hall of Fame Annex"), whose column appears each month in Macworld, is the author of Hackers: Heroes of the Computer Revolution, now published in paperback by Dell.

Erfert Nielson ("Macintosh-Aided Design" and "Insights on SuperPaint"), a founding member of the Macworld staff, is now a Macworld contributing editor who specializes in graphics.

Bangs L. Tapscott ("The Disk Shopper's Guide to Storage") is a professor of philosopby at the University of Utab. He is the author of several books and articles in the field of mathematical logic, a founding officer of the Utah Macintosh Users Group, and the editor of its newsletter, MacFUG News.

Franklin Tessler ("Mac System Tools") is a contributing editor of Macworld and a founder of the Los Angeles Macintosh User Group. He also uses the Mac in his other life as a radiologist.

Bruce Webster ("Looking through the Mac II Kaleidoscope") is a Macworld contributing editor and widely published writer who specializes in personal computer topics. He's been watching the Mac since its 128K days.

27 MEGA*BITE* **PORTABLE** McINTOSH II

One of a kind. Truly Unique. Simply the best gift idea since the invention of the McIntosh Apple (a long time ago).

Made of elaborate corrugated stock with a true life like design including screen, keyboard, disk drives, cable connections, and best of all, two hand picked tree ripened McIntosh apples at the heart of the computer. And when the apples are gone, you have storage for 60 diskettes. Actual size 7x7x4.5 inches.

Comes complete with manual (lots of laughs), and tips to get the most from your McIntosh! No better holiday gift for the Macintosh enthusiast. Delivered before holidays. Satisfaction guaranteed.

HURRY, order today, quantities limited. Questions? Call 605-348-9131

Send \$11.95 + \$3 S&H, Total \$14.95 to NATIONAL COMPUTER ASSOCIATION P.O.Box 3462, Rapid City, SD 57709.

Send for Info. on other Products & Newsletter.

Circle 614 on reader service card

Discover the quality magnetic media from 3M







3M Diskettes 51/4" SSDDRH Diskettes DSDDRH DSHD 96TPI\$1.59 Ea. SS MICRO \$1.12 Ea. Diskettes DS MICRO\$1.59 Ea. DSHD MICRO \$4.85 Ea.

Sold 10/Box Min.: 50 Disks. S & H \$4.00, FIRST 100 OR FEWER DISKS. \$3.00, EACH SUCCEEDING 100 OR FEWER DISKETTES.

Let HAMMERMILL Computer

Papers do the paperwork.

PEN PLOTTER PAPER
Use with Hewleit Packard & Made exclusively for ink jet other compatible pen plotter printers. White, 24 lb., 8½ x White 20 lb. paper, 9½ x 11, 11 sheets. #19935, 250 sheets. Plus \$2.00 S&H size 8½ x 11. #19911 1000

\$4.95 sheets. Plus \$5.00 S&H

THERMAL TRANSFER PAPER For Apple Scribe, Okimate 10/20 and other ETC. Un-coaled white 20 lb. paper. #19900 250 Ianfold, pinfeed sheets. Plus \$2.00 S&H

\$22.95 WATERMARKED BOND PAPER #1990 5 250 cut 9 ½ x 11 sheets. Plus \$2.00 S&H

MINIMUM ORDER: \$25.00. S&H: Continental USA. Foreign Orders, APO/FPO, please call. MI residents add 4% tax. C.O.D. add \$4.00; payment with cash, certified check or money order Prices subject to change. Hours: 8:30 AM—7:00 PM ET.

. \$3.95

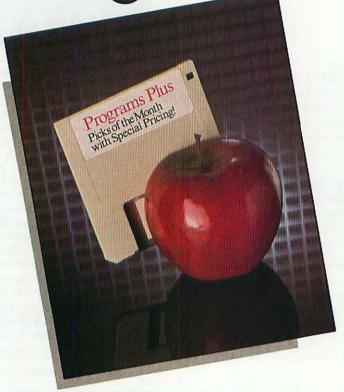
Call for FREE CATALOG Precision Data Products"

P.O. Box 8367, Grand Rapids, MI 49518 (616) 452-3457 • FAX: (616) 452-4914 Michigan 1-800-632-2468 Outside Michigan 1-800-258-0028



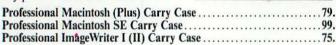
Circle 631 on reader service card

Programs & Peripherals Picks of the Month



The Madson Line Professional Series Macintosh Carrying Čases

Madson Line Computer Luggage is designed for those seeking the professional look & feel of black ballistic nylon accented with leather on the hand grid, shoulder pad, and identification pocket. The interior pocket for the keyboard is made with laminated foam and there are pockets for a modem, mouse and folders. Fitting the Mac128/512, MacPlus, Mac SE, Imagewriter I or II and carrying a lifetime guarantee, the Madson Line cases are the best we've ever seen at any price!



Utility Software

ALSoft Disk Express	27.	Icon-It! (Assign Icons to Menu Items)	52
Berkeley System Design		Read It! TS (For Thunderscan)	99
Stepping Out (Macintosh		Read It! (For Image Scanners)	189
Screen Extender)	55.	Personal Computer Peripherals Corp.	
CE Software DiskTop 3.0	35.	HFS Backup V2.0	32
Central Point Software		Softstyle Printworks	49
Copy II Mac (Includes MacTools)	20.	SuperMac Software SuperSpool	
Centram Systems West, Inc.		(ImageWriter Print Spooler Utility)	49
Tops For The Macintosh	125.	Diskfit (Backup & Restore Utility)	49
Fifth Generation Systems		SuperLaserSpool	99
FastBack For The Macintosh	59.	Multi-User SuperLaserSpool	259
Ideaform Mac Labeler (Version 2.2)	29.	Sentinel	99
DiskQuick (Disk Librarian)	29.	THINK Technologies HFS Navigator	39
Infosphere		LaserSpeed (Single User)	59
MacServe (Network Software)	165.	Williams & Macias myDiskLabeler	24
LaserServe (LaserWriter Print Spooler)	65.	myDiskLabeler w/Color	33
ComServe (Modem Sharing Software)	125.	myDiskLabeler w/LaserWriter Option	38
Olduvai Software DA-Switcher		Working Software, Inc.	
(Switch Multiple Sets of DA's)	32.	Findswell (Document Finder)	37

MacTilt & MacTilt SE by Ergotron



MacTilt raises the Macintosh 4 inches, providing 30° tilt, and 360° rotation providing the increased height and adjustability needed to reduce glare, and to ease eye, neck, and back strain. MacTilt SE is designed especially for the Mac SE. The original MacTilt comes standard with a universal drive bracket and fits the 128K, 512K, and the MacPlus. Get MacTilt and bring your Mac up to eye level!

MacTilt or MacTilt SE Mouse Cleaner 360°

Turbo SE, MaxPlus Mega, & MultiSIMMs by MacMemory

Turbo SE, MaxPlus Mega, and MultiSIMMs are products unsurpassed in quality and compatibility. All MacMemory products are stringently manufactured using 100% fully inspected chips with a 72-hour burnin, and final quality check in test Macintoshes producing the highestquality memory products on the market. All MacMemory products carry a full two-year warranty and are designed to make your Macintosh fly higher and faster than ever before!



219.

79

Turbo SE (16 Mhz, 68000 accelerator for the Macintosh SE. Doubles the SE's speed while offering complete compatibility. Allows an optional 68881 math coprocessor).

395.

MaxPlus Mega (Expands the MacPlus to 2MB with CMOS

Megabit chips. Not for use with big screens).

345.

MultiSIMMs are Apple-standard, megabyte SIMMs for the MacPlus, Mac SE, Mac II, TurboMax and Turbo SE equipped Mac using low-power-consumption, surface-mounted CMOS chips:

MultiSIMMs 2MB Set (1MB to 2.5MB Upgrade).

629. MultiSIMMs 4MB Set (1MB to 4MB Upgrade)

Deck Accessory Programs

Affinity Microsystems Tempo	55.	Imagine Software		
Batteries Included		Smart Alarms &		
Battery Pak (9 Desk Accessories)	32.	Appointment Diary	Special	35
Borland SideKick V2.0	59.	Multi-User Appointment Diary	3800000	
Cortland		with Smart Alarms	Special	95
Top Desk (7 New Desk Accessories)	34.	Solutions, International	-	
Greene, Inc. QuickDex		SmartScrap & The Clipper		
(Computerized Address Book)	24.	(New Scrapbook DA)		41.

Bangaages	DECOMPOSES		E SHIPPING
Apple Computer MacPascal	99.	Microsoft Microsoft Basic Interpreter 3.0	64.
Borland Turbo Pascal	59.	Microsoft Basic Compiler 1.0	119.
Turbo Pascal Database Toolbox	59.	Microsoft Fortran Compiler 2.2	169.
Turbo Pascal Numerical Methods	59.	THINK Technologies Lightspeed C	99
Turbo Pascal Tutor	49.	Lightspeed Pascal	65.
Consulair		CAPP' for Lightspeed C	54.
Macintosh 68000 Development System	59.	CAPP for Lightspeed Pascal	36.
Mainstay		TML Systems TML Pascal V2.0	68.
V.I.P. (Visual Interactive Programming)	85.	Zedcor, Inc. ZBasic 4.0	69.
Communications Cat			

Communications Software

Apple Computer MacTerminal	99.	Think Technologies, Inc.		
Compuserve Compuserve Starter Kit	24.	InBox-Starter Kit V2.0		
DataViz MacLink Plus with Cable	159.	(3 Personal Connections)		
Software Ventures		InBox-Additional		
Microphone 1.1 (Includes Glue)	119.	Personal Connections		

to Polish Up Your Mac...

with Special Pricing! Specials good through December 31, 1987

Lookup by Working Software

Lookup is a new desk accessory spelling guide that can be accessed at any time to find the spelling of a single word, in any Macintosh program! Just highlight a word in your document and Lookup will check it against it's 93,000 word dictionary. If Lookup finds the word you hear a beep and can continue working. If it's unknown, a screen appears, allowing you to correct the word by using Lookup's suggestions. When a word doesn't look right, look it up with Lookup!



MacCalligraphy 2.0 by Enzan-Hoshigumi USA



MacCalligraphy 2.0 is a totally new kind of software that can make you a master of the ancient art of calligraphy in a matter of minutes. With a choice of brush sizes and control over brush touches, shades of gray, speed of ink flow and "tail" lengths you can enter a realm of graphics creativity that simulates the medium of brush and ink on paper. MacCalligraphy simulates painting in the real world and can artistically give you results as personal and expressive as your own signature!

MacCalligraphy 2.0	115.
Japanese Clip Art Scroll 1 "Heaven" or Scroll 2 "Earth"	
Japanese Clip Art "Borders" Scroll	69.

ThunderScan 4.0 with Power Port by Thunderware

Ever since ThunderScan started zipping back and forth inside the ImageWriter, it's been famous for eye-popping graphics. Now, the most popular Macintosh scanner is better than ever with true halftone capabilities, special effects, and more. ThunderScan images can now be saved in a variety of formats providing complete compatibility with PageMaker 2.0 and other desktop publishing programs. Grace the pages of your publications with honest-togoodness halftones from Thunder-Scan and it's software palette that lets you alter any image to your art's desire!



ThunderScan 4.0	
with Power Port	199.

Smart Alarms & Appointment Diary by Imagine Software



Smart Alarms is a unique desk accessory that makes it easy to remember things you can't affort to forget. With Smart Alarms, when a reminder comes due, your message comes up on screen on top of whatever application you're running. And, the included Appointment Diary makes it easy to write notes about important events as they occur. Best of all, the Appointment Diary is integrated with Smart Alarms, making it easy to set automatic reminders for all your upcoming events.

Smart Alarms & Appointment Diary	35.
Multi-User Appointment Diary with Smart Alarms	

Scoop by Target Software

Scoop is a new desktop publishing program designed to run circles around the competition. For one thing, Scoop can wrap text around circular or irregular shaped objects with a click of the mouse. Scoop also allows you to create text and graphics simultaneously from within a totally self contained program. It comes complete with the features you'd find in SuperPaint and MacDraw, an excellent word processing program, and a 140,000 word dictionary. Point is, even if you bought all the supplementary programs needed to "soup-up" another desktop publishing pack-



age it still wouldn't do what Scoop can do!

Scoop.

Positively A Plus



800/832-3201

Circle 194 on reader service card

Positively A Plus!

Disk Drives/Hard Disks/Upgrades

AST Research		MacMemory, Inc.		
AST fAST-20	859.	Turbo SE		
20 MB External Hard Disk for		(16Mhz 68000 Accelerator		
Macintosh Plus, SE and Mac II.		for the Mac SE)	Special	395.
AST-2000	1395.	Motorola 68881		
20 MB External Hard Disk with		(Math Coprocessor		
20-MB Cartridge-Tape Backup		for Turbo SE)	Special	349.
for the Macintosh Plus & SE.		MaxPlus Mega		
AŚT-4000	3695.	(2MB Upgrade with 1MB		
74 MB External Hard Disk with		Chips for MacPlus)	Special	345.
60-MB Cartridge-Tape Backup		Megabyte SIMMS for the Mac	Plus,	
for the Macintosh Plus & SE.		Mac SE, Mac II, Turbo Max		
Central Point		Turbo SE equipped Mac:		
Central Point 800K External Drive	185.	MultiSIMMs 2MB Set		
Dove Computer Corporation		(1MB to 2.5MB Upgrade)	Special	629.
MacSnap Model 524 or 524E		MultiSIMMs 4MB Set		
(512K to 1MB Upgrade)	139.	(IMB to 4MB Upgrade)	Special	1299.
MacSnap Model 524S (512K		Network Specialties		
to IMB Upgrade w/SCSI Port)	239.	Jump! Board 020		779.
MacSnap Model 548 or 548E		Jump! Board 020 with		
(512K to 2MB Upgrade)	369.	IMB Ram		929
MacSnap Model 548S (512K		Jump! Board 020 with		
to 2MB Upgrade w/SCSI Port)	459.	1MB Ram & 68881		1089.
MacSnap 2s (IMB to 2.5MB		Personal Computer Peripherals		
Upgrade for MacPlus or Mac SE)	695.	Beige or Platinum Color. Option		
MacSnap 4s (IMB to 4MB	3650	Built-In Modems Available.		
Upgrade for MacPlus or Mac SE)	1395.	MacBottom HD-21		
MacSnap Toolkit (Wrench,	11000	(20+Mb SCSI Hard Disk)		789
Case Cracker & Grounding Set)	14.	MacBottom HD-32		10.55
Ehman Engineering		(32Mb SCSI Hard Disk)		899
Ehman 800K External Disk Drive	189.	MacBottom HD-45		1000
First Class Peripherals		(45 Mb SCSI Hard Disk)		1189
Sider C-46 (40MB Hard Drive		MacBottom 20 (20+Mb		350
with 60MB Tape for		Serial Hard Disk for		
MacPlus/SE or Mac II)	1629.	Mac 512k & Mac Plus)		859

Digitizers

AST		New Image Technology	
TurboScan		Magic Digitizer (Mac 128/512k	
(Optically Scans & Digitizes		or MacPlus Version)	249.
at 300 Dots-Per-Inch)	1395.	Summagraphics	
Impulse		MacTablet 12 x 12 size	379.
Impulse (MacNifty)		ThunderWare ThunderScan V4.0	
Audio Digitizer V2.0 w/SoundCap	149.	with Power Port (Mac 512K,	
Koala Technologies Corp.		512K Enhanced, MacPlus,	
MacVision (Digitizer)	169.	and Macintosh SE)	Special 199.

Accessories

Bech-Tech		Disk Drive Cleaning Kit		20.
Fanny Mac	69.	Tilt/Swivel		22.
Cambridge Automation		Universal Copy Stand		24.
Numeric Turbo	99.	Polarizing Filter		34.
Central Products		Printer Muffler 80		39.
MacOpener (All In One Mac Tool)	16.	Printer Muffler 132		52.
Curtis Manufacturing		Control Center		64.
Diamond-Surge Suppressor-SP-I	29.	System Saver Mac		
Emerald-Surge Suppressor-SP-2	36.	(Beige or Platinum)		64.
Ruby-Surge Suppressor-SPF-2	55.	A/B Box (MacPlus Only)		64.
Sapphire-Surge Suppressor-SPF-1	47.	Turbo Mouse		85.
Ergotron		Moustrak		
MacTilt or MacTilt SE		MousePad 7" x 9" Size		8.
(Platinum Color) Spec	ial 74.	MousePad 9" x 11" Size		9.
Mouse Cleaner 360° Spec	ial 14.	Nuvotech		
I/O Design		EasyNet (Specify Din 8 or DB-9)		29.
Mac Luggage Available in Navy		Nutmeg 15" Monitor		
or Platinum Gray		(Displays One Full Page)	1	449.
Macinware Plus Carrying Case	69.	Nutmeg 19" Monitor		
Macinware SE Carrying Case	79.	(Displays Two Full Pages)	1	1579.
Imageware II Carrying Case	49.	Ribbons Unlimited		
Kalmar Designs		Available in Black, Blue, Brown,		
Teakwood Roll-Top Disk Cases:		Green, Orange, Purple, Red,		
Micro Cabinet (holds 45 disks)	14.	Yellow, Silver & Gold		
Double Micro Cabinet		ImageWriter Ribbon-Black		4.50
(holds 60 disks)	21.	ImageWriter Ribbon-Color		5.
Triple Micro Cabinet		ImageWriter Rainbow Pack (6 Co		25.
(holds 135 disks)	29.	ImageWriter II-Four Color Ribbo	on	12.
Kensington		SoftStyle MacEnhancer		175.
External Disk Drive Cover	8.	The Madson Line		
Mouse Pocket	8.	Professional Series Carry		
Mouseway (Mousepad)	8.	Cases In Black Ballistic Nylon		
ImageWriter or ImageWriter II Cover	9.	Mac(Plus) Carry Case	Special	
Macintosh (Plus) Dust Cover	9.	Mac SE Carry Case	Special	99.
Mouse Cleaning Kit w/Pocket	17.	Image Writer 1 (II) Carry Case	Special	75.

Blank Media

AND DO NOT THE RESIDENCE OF THE PARTY OF THE			
Single Sided 31/2" Diskettes		Double Sided 31/2" Diskettes	
BASF 31/2" SS/DD Disks (box of 5)	8.	BASF 31/2" DS/DD Disks (box of 5)	9
Bulk (Sony) 31/2" SS/DD Disks (10)	12.	Bulk (Sony) 31/2" DS/DD (10)	16
Sony 31/2" SS/DD Disks (box of 10)	14.	Centech 31/2" DS/DD Color Disks	
Centech 31/2" SS/DD Color Disks		(box of 10)	19
(box of 10)	16.	Sony 3½" DS/DD Disks (box of 10)	19
Fuji 31/2" SS/DD Disks (box of 10)	14.	Fuji 31/2" DS/DD Disks (box of 10)	20
Maxell 31/2" SS/DD Disks (box of 10)	13.	Maxell 31/2" DS/DD Disks (box of 10)	20
Verbatim 31/2" SS/DD Disks (box of 10)	13.	Verbatim 31/2" DS/DD Disks (box of 10)	20
3M 31/2" SS/DD Disks (box of 10)	14.	3M 31/2" DS/DD Disks (box of 10)	20
C.Itoh Color Disks SS/DD (box of 10)	22.	C.Itoh Color Disks DS/DD (box of 10)	25

Modems

MODELLO CONTROL CONTROL OF THE PARTY OF THE			WEST ST
Hayes Microcomputing		Prometheus	
Smartmodem 1200	299.	Promodem 1200	
Smartmodem 1200 Mac		(Hayes Compatible)	239
w/Smartcom II & Cable	359.	Promodem 2400	
Smartmodem 2400	449.	(Hayes Compatible)	309
Transet 1000-128K	269.	Mac Pack w/Procom M and Cable	
Transet 1000-512K	359.	(Specify Mac or MacPlus)	49
Transet 1000 Mac Accessory Kit	29.	U.S. Robotics	
InterBridge		Courier 1200 (Hayes Compatible)	199
(Connect Appletalk Networks)	599.	Courier 2400 (Hayes Compatible)	349
Migent		Courier 2400E (Haves Compatible)	409
Migent Pocket Modem		Courier HST 9600	
(ext. 300/1200 Baud)	169.	(Hayes Compatible)	689

800/832-3201

Customer Service (203) 378-3662 Monday thru Friday 9 A.M. to 9 P.M. Saturdays 10 A.M. to 6 P.M. (Eastern Time)

OUR POLICIES

- . We accept MASTERCARD and VISA with no added surcharge.
- · Your credit card is not charged until we ship.
- If we must ship a partial order the shipment that completes the order is sent freight free.
- If you are ordering by mail, we accept private and company checks. With MASTERCARD and VISA orders include card number and expiration date. Connecticut residents add 7.5% sales tax.
- Locations more than 1 day away shipped via Federal Express Rush-Air-Delivery.
- · Sorry, we cannot accept COD orders.

SHIPPING

 Continental United States: Add \$3.00 per order to cover Federal Express Rush-Air-Delivery. APO/FPO orders shipped 1st Class Mail (add 3% \$5.00 Min charge). Alaska, Hawaii and Outside Continental US: call or write for information.

RETURNS

 Defective software will be replaced immediately by the same item. Defective hardware will be replaced or repaired at our own discretion. Call customer service at (203) 378-3662 to obtain a Return Authorization Number before returning goods for replacement. Products purchased in error subject to a 20% restocking fee.

All items subject to availability. Prices subject to change without notice.

Now Shipping Rush-Air-Delivery by





75 Research Drive Stratford, Connecticut 06497 800/832-3201

& Phenomenal Prices.

~	-			
Data	Rase	Ma	nager	nent
Dala	Dasc	IVIa	Hagel	

Ashton Tate D Base Mac	329.	Forethought FileMaker Plus	159
Blythe Software		Microsoft Microsoft File 1.05	110
Omnis 3 Plus	259.	Nantucket Software McMax	199
Omnis 3 Plus Multi-User		Odesta Double Helix II	339
(MacServe, Tops Network,		Multi-User Helix	439
Corvus, or Appleshare Network)	499.	ProVUE Development	
Borland Reflex Plus	Call	OverVUE 2.1	149
Chang Laboratories		Software Discoveries	
C.A.T. Contacts • Activities • Time	239.	RecordHolderPlus	45

Business Software

Apple Computer MacProject	159.	Lotus Jazz	179.
Bravo Technologies MacCalc	85.	MacroPac International	
Borland Eureka! The Solver	129.	101 Macros For Excel	49.
Cricket Software		Micro Planning Software	
Cricket Graph	125.	Micro Planner Plus	299.
Data Tailor		Microsoft Microsoft Works 1.10	189.
Trapeze 2.0 (Spreadsheet) Color		Microsoft Multiplan I.II	110.
Report Generator)	159.	Microsoft Chart 1.02	72.
Deneba Software Comment		Microsoft Excel 1.04	224.
(Attach Electronic Notes to Files)	64.	Micro-Systems Software	
Forethought PowerPoint	209.	Analyze! (New Spreadsheet)	99.
Layered		Satori Software Legal Billing	369.
Notes For Excel, Jazz, PageMaker,		Legal Billing II	539.
Microsoft Works or Word 3.0 (each)	42.	Project Billing	439.
Legisoft/Nolo Press		Bulk Mailer 3.0	85.
WillWriter V2.0	31.	Bulk Mailer Plus 3.0	199.

Word & Outline Processors

Ann Arbor Softworks		MindWork Software	
FullWrite Professional	169.	MindWrite 1.1	179.
Apple Computer MacWrite	99.	OWL International	
Firebird Licensees		Guide	79.
Laser Author	105.	Guide Envelope System	99.
Living Videotext More	149.	Symmetry Acta V1.2	38.
Microsoft Microsoft Word 3.01	239.	T/Maker Company WriteNow	98.

Spelling & Grammar Checkers

THE RESIDENCE OF THE PARTY OF T	arrest revenue	AND DESCRIPTION OF THE PERSON	CONTRACTOR OF THE PARTY OF THE	-
Aegis Development		Lundeen & Associates		
Doug Clapp's Word Tools	42.	WorksPlus Spell		39
A.L.P. Systems MacProof 3.0		Microlytics, Inc.		
(Requires MacPlus)	115.	Word Finder (Synonym Finder)		39
Batteries Included		Working Software, Inc.		
Thunder! (Interactive Spelling Checker)	32.	Spellswell Spelling Checker		
Deneba Software Spelling Coach 3.0		& Proofreader 2.0		42
(Webster's Medical Legal Hyphenation)	64.	Spellswell Medical Dictionary		
Spelling Coach 3.0 Professional		(35,000 Medical Terms)		59
(Adds Definitions & Thesaurus)	129.	Lookup		
Coach Merriam Webster's Thesaurus 2.0	39.	(Makes Spelling Suggestions)	Special	31
Coach Meritan Websier's Thesaurus 2.0	27.	(Munes opening ouggestions)	Special	

Desktop Publishing

Aldus Corporation PageMaker	399.	Postcraft International, Inc.	
Allan Bonadio Associates		Laser FX (Special Effects	
Expressionist (Equation Processor)	52.	for Desktop Publishing)	119
Boston Publishing Systems		Quark, Inc. QuarkXPress	499
The MacPublisher III	139.	Solutions, International	
Letraset Ready, Set, Go! 4.0	289.	Glue (Adds "Print to Disk" Capability)	41
ImageStudio		Super Glue (Graphics Integration Software) 59
(Image Processing Software)	289.	Target Software Scoop Special	

Accounting Packages

Chang Labs		Digital, Etc.	
New Enhanced Version III Modules!		Turbo Maccountant V2.0	259.
Rags to Riches GL, AR, or AP	125.	Migent In House Accountant	99.
Rags to Riches Three Pack-		Monogram Dollars & Sense	81.
(GL AR AP)	299.	Peachtree	
Inventory Control or		Back To Basics Three Pack	
Professional Billing	243.	(GL AR AP)	139.
Professional Three Pack-		Survivor Software MacMoney	
GL/Professional Billing/Payables	349.	(Financial Planner)	42.

Statistics Packages

BrainPower		Systat	
StatView 512 Plus	179.	Systat 3.1 (Specify Mac 512K,	
Cricket Software Statworks	75.	MacPlus, or Mac II)	459.

Graphics Software

VALUE OF THE PARTY	SHOULD BE SHOULD		10 mg
Altsys Corp. FONTastic	27.	MacroMind VideoWorks II	119.
FONTastic Plus	49.	Miles Computing	
Fontographer 2.2	245.	Mac The Ripper, Orchestra of Fonts,	
Ann Arbor Softworks Full Paint		People-Places-Things, or	
Apple Computer MacPaint	99.	Taking Care of Business (each)	27.
Broderbund Print Shop	39.	Mindscape ComicWorks	48.
Casadyware		GraphicWorks 1.1	48.
Fluent Fonts 2.0 (Two-Disk Set)	29.	Olduvai Software	
Fluent Laser Fonts Vol. 1-15 (ea)	48.	Post-ART (Three Disk Set)	45.
Deneba Software Canvas 1.0		Silicon Beach Software	
(Includes Desk Accessory)	125.	SuperPaint	99.
Dubl-Click Software		Silicon Press	41.
World Class Fonts! (Both Volum	es) 49.	Solutions International	
WetPaint (Both Volumes)	49.	The Curator (Catalog Your Art)	95.
Enzan-Hoshigumi USA		Springboard Certificate Maker	35.
MacCalligraphy 2.0	Special 115.	Symmetry PictureBase V1.2	44.
Japanese Clip Art Scroll I	- A05000	T/Maker	
"Heaven" or Scroll 2 "Earth"	Special 59.	Click Art Letters I, Letters II, Personal	
Japanese Clip Art	2000	Graphics, Publications, Effects,	
"Borders" Scroll	Special 69.	Business Image, Holidays or	
LaserWare, Inc.		Christian Images (each)	28.
LaserPaint	319.	Click Art Laser Fonts: Plymouth,	
LaserWorks	199.	Bombay, or Seville (each)	46.

CAD Products

Apple Computer MacDraw	159.	Enabling Technologies Easy 3D	89.
Challenger Software	****	Professional 3D	199.
Mac 3D (Enhanced Version 2.0)	119.	Innovative Data Design	
Cricket Software		MacDraft (Updated Version 1.2)	159.
Cricket Draw	175.	Silicon Beach Software Super 3D	199.

Educational/Creative Software

Baron's Baron's SAT	35.	Hayden MusicWorks	29.
Bogas Productions Studio Session	59.	Score Improvement System for the SAT	59.
Broderbund Sensei Geometry	64.	Micro: Maps MacAtlas Paint Version	
Calculus or Physics	64.	(MacPaint Format)	32.
Davidson & Associates		MacAtlas Professional	
Speed Reader II	39.	(PICT/ MacDraw Version)	129.
Math Blaster or Word Attack!	28.	Mindscape Perfect Score SAT	
Electronic Arts		w/The Perfect College	46.
Deluxe Music Construction Set V2.0	63.	Nordic Software	
1st Byte/Electronic Arts	(5.5%)	MacKids Educational Programs (each)	29.
Kid Talk, Speller Bee,		Passport Designs	
First Shapes, or Math Talk	32.	Passport MIDI Interface	95.
Mathtalk Fractions, First Letters &	(5,000)	Master Tracks Pro	259.
Words, or Smoothtalker	32.	Rubicon Publishing	
Great Wave Software	877	Dinner at Eight-Silver Palate Bundle	52.
KidsTime, TimeMasters		Simon & Schuster Typing Tutor IV	35.
or NumberMaze	28.	Springboard	
Concertware+ 4.0	42.	Early Games for Young Children	28.
Concertware+ MIDI 4.0	85.	Easy as ABC	28.

Game Software

Game Software			
Accolade Hard Ball	24.	Hitchhiker's Guide to The Galaxy	19.
Activision Shanghai or Hacker II	24.	Zork Trilogy	45.
Hacker	16.	Microsoft	
Portal	32.	Flight Simulator 1.0	32.
Artworx Bridge 5.0	22.	Miles Computing Inc.	
Avalon Hill Mac Pro Football	30.	The Fool's Errand or Downhill Racer	27.
Broderbund Ancient Art of War	27.	Mindscape	
Bullseye Software		Balance of Power or	
Fokker TriPlane Flight Simulator	34.	Crossword Magic	32.
Ferrari Grand Prix	34.	Deja Vu: A Nightmare Comes True	32.
Electronic Arts Starfleet 1	37.	King Of Chicago or Shadowgate	32.
Venture's Business Simulator	49.	The Uninvited or Siboot	32.
ChessMaster 2000 or Patton vs Rommel	30.	Practical Computer Applications	
Archon, One-On-One, Pinball		MacGolf 2.0 or MacRacquetball	36.
Construction Set, Seven Cities of		MacCourses	34.
Gold, Software Golden Oldies		Psion	
or SkyFox (each)	15.	Psion Chess (3D & Multi-Lingual)	31.
EPYX Winter Games		Sierra On-Line	
or Sub Battle Simulator	24.	Space Quest	32.
Hayden Software Sargon III	29.	King's Quest I, II, or III (each)	32.
Infinity Software, LTD.		Silicon Beach Software	
Grand Slam Tennis II	34.	Apache Strike or Beyond Dark Castle	32.
World Cup Soccer	27.	Enchanted Scepters	21.
Go	23.	Dark Castle	28.
Infocom		World Builder	41.
Ballyhoo, Beyond Zork, Bureaucracy,		Simon & Schuster	1293
Hollywood Hyjinx, Leather Goddesses		Star Trek (The Kobayashi Adventure)	24.
of Phobos, Moon Mist, Nord & Bert,		Sir-Tech Mac Wizardry	35.
Plundered Hearts, Stationfall,		Sphere, Inc.	
The Lurking Horror, Trinity,		GATO, Orbiter, or Falcon	26.
or Zork 1 (each)	25	XOR Software NEL Challenge	69.

Typefaces

To Adorn Your Every Expression Sorones

Kupurinua

Cavenby Script

RILZ & Gregorian

Regency Script (ATSB)

MONTEREY Sans Serif

BODONI & Bodoni Ultra

alligraphy & Zephyr Scrip

RIGHT BANK Sans Serif Extra Bold

Fifteen volumes of downloadable PostScript® Typefaces for the Apple® Macintosh® & LaserWriter® as well as the Allied Linotronic® imagesetter and other PostScript-

compatible printers.



Call or Write for Printed Samples

For Orders Call (800) **331-4321** or in Calif. (800) **851-1986**



For Information Call (408) 646-4660

TRADEMARKS: Fluent Fonts Fluent Laser Fonts-CasadyWare Inc., Macintosh, LaserWriter ImageWriter-Apple Computer Inc.: PostScript-Adobe Systems Inc.: Linotranic-Alled Linotype



Text fonts for easy-to-read word processing-more sizes

■ Larger display faces for headlines and graphic arts

■ Technical fonts for architecture, electronics, math, and science

■ New borders to enhance a letterhead or to surround your fext

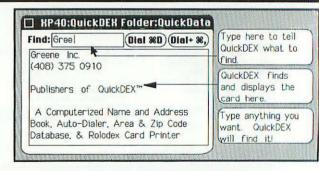
■ Foreign language fonts

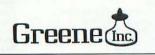
Circle 757 on reader service card

NEW QuickDEX The productive alternative to Hypercard The productive alternative to Hypercard

Con	nparison of QuickDEX and Hypercard	i's Rolodex QuickDEX	Stack: Hypercard:	
	 Time to Find, Copy, & Paste 			
	Name and Address into letter	11 Sec	76 Sec	
	 RAM needed for 300 names 	~70K	600K+	
3	 Bytes for each additional card 	~100	1100	
- 1	 Max Open Decks At One Time 	8	1	
	 Works inside Application as a DA 	YES	No	
	Print Only New or Changed Cards	YES	No	
	 Supports Modem Auto Dialing 	YES	Yes	
	Works on 512K Mac and up	YES	No	

List price is \$35. You can purchase QuickDEX from your favorite dealer or directly from Greene Inc. (Add \$2.50 Shipping and applicable sales tax on direct orders.)





15 Via Chualar, Monterey, CA 93940 800 851 1986 Calif. — 800 331 4321 U.S 408 375 0910 Info

Trademarks: QuickDEX, PrintDEX -- Greene Inc.; Rolodex -- Rolodex Corp.; Rediform -- Rediform Office Supplies; Hypercard -- Apple Computer.



Why I Use What I Use

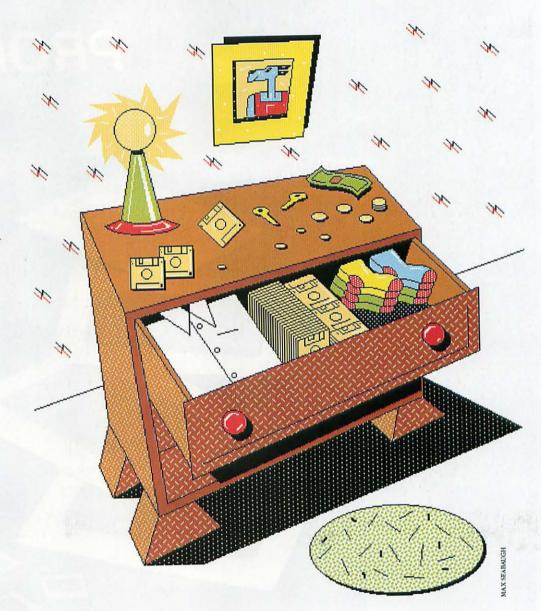
These are a few of my favorite things

In 1984, when I first purchased my Macintosh, decision making was easier—much in the way the culinary options of hostages are limited. If your captors serve you rolls and water, you eat the rolls and drink the water. If croissants are on the bill of fare, you are grateful. With the original Mac you had water (*MacWrite*) and a croissant (*MacPaint*), followed by hard-boiled egg (*Multiplan*). If you wanted more, you had to write your own programs or find them from user groups—the equivalent of scrounging around your cell for insects.

Now of course there is a cornucopia of software available—everything from cheesesteaks to filet mignon. But there are also excruciating decisions to make. Almost everything you'd want to do on the Macintosh requires a process of elimination. Flip through the pages of this magazine and you are bombarded by conflicting claims of the various contenders in each application. Some of them are so bold as to say, Don't buy *that* pig of a program—buy ours! How do you choose?

The standard answer is simple. You figure out your needs, get literature from the companies selling software that seems to address those needs, scan the features the programs offer and the way they perform those features, narrow your search down to a short list, and then try those programs out to see which one is best for you. Somewhere in that process you also seek out people already using the software to get the benefit of their experience.

So much for fantasy. Reality is much more complicated. If people did things as described above, they would be spending almost as much time and energy *choosing* the software as using it. Assuming they find a dealer willing to let them diddle around with expensive applications for hours until the winner is apparent. (At which point they may thank the dealer and go home to call Mac Connection.) No, in

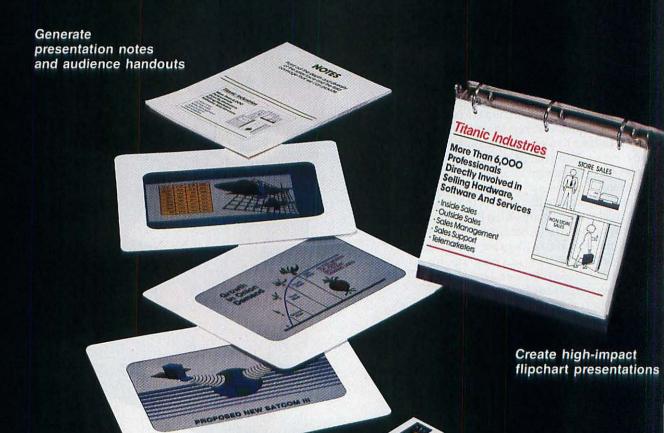


my experience people choose software more haphazardly. Most often, they buy whatever is offered up as the "best" when they buy the computer. What they buy later depends on many less-than-scientific factors. Maybe something strikes them in an ad or a review. Or a friend recommends something. Or—this is not something I endorse, but it happens—someone slips them a pirated program.

I suspect that everyone wonders whether the software they use is really the best for the job. Perhaps it once was, but something new has eclipsed it. When do you know if a new program is good

(continues)

PROFESSIONA



Create black & white or full color transparencies for overhead projection

Produce 35mm slides with film recorders or outside film services

Introducing Cricket Presents...

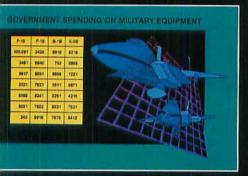
Finally, there's a presentation graphics tool that gives you the capability to produce high quality, full color or black & white presen-

For creating complex color visuals, Templates really become a worksaver. Simply create templates for areas that repeat from slide-to-slide. Plus you can layer templates on any slide for maximum slidemaking flexibility.

DESKTOP PRESENTATIONS



Simple word-charts are easy with Templating



Integrate tables with sophisticated drawings



Scan in images and integrate into slides tations on the Macintosh — Cricket Presents...

Cricket Presents...The Creative Environment

Cricket Presents... provides a comprehensive creative environment. All the tools you need to conceptualize, create, and produce quality, color presentations are built right in — presentation planning, text editing, full object-oriented drawing, graphing, image manipulation, and presentation animation. You'll never have to leave Cricket Presents...to get the job done.

Cricket Presents... Full Color

Black & white is fine for simple presentations, but color makes impact and impact sells. Cricket Presents. . . lets you put dazzling color into your text, drawings and graphs.

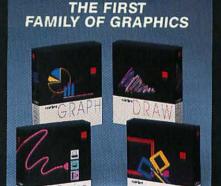
Cricket Presents... Templates

Cricket Presents...uses a powerful feature called Templating to help you build your presentation quickly AND easily. With Templates, simple word-chart slides become a snap. Just select a style from the Template library and type in your text — the rest is done for you automatically!



Cricket Presents... Unprecedented Output Device Support

Cricket Presents...frees you from dependence on PostScript compatible devices. With Cricket's unique Device Drivers you can get full color output from a variety of printers, film recorders and film services including the HP PaintJet, Xerox 4020, Matrix SlideWriter, HP LaserJet, and Autographix Slide Service. Cricket Presents. . . comes complete with the standard Apple ImageWriter and LaserWriter drivers and your choice of any Cricket Device Driver (includes driver, cable, and standard font package).



When it comes to Macintosh graphics software, there's just one name to remember — Cricket Software. Your local dealer will be happy to introduce you to the entire family: Cricket Graph, Cricket Draw, Cricket Presents..., and Cricket Device Drivers.

Cricket Software, 30 Valley Stream Parkway, Great Valley Corporate Center, Malvern, PA 19355 (215) 251-9890

Macintosh is a trademark of Apple Computer Inc. • ImageWriter is a trademark of Apple Computer Inc. • LaserWriter is a trademark of Apple Computer Inc. • LaserJet is a trademark of Hewlett-Packard • PaintJet is a trademark of Hewlett-Packard • SideWriter is a

Circle 684 on reader service card

Steven Levy

enough to make you abandon the one you're already familiar with? What if you change and find the new one is worse? No matter how happy you are with your current software, you will never know if it's the very best for your particular needs, simply because it is virtually impossible to give the others detailed tryouts.

I don't want to sound apocalyptic about this: the vast majority of Macintosh programs are terrific. The difference between a decent Mac application and a great one is insignificant when compared to the difference between using a computer to perform a task and not using one. So it boils down not to a matter of whether you're winning or losing, but how big you win.

That said, I thought it might be instructive to share some of my personal experiences with Macintosh software, along with some of the conflicts I have concerning whether to switch or ditch certain programs. Since I have access to both software and experts, I presumably have more freedom to play the field when it comes to ap-

plications. Yet since I am as immobilized by inertia as the next guy, I resist software promiscuity.

One warning: please do not mistake my naming a given piece of software as a full endorsement of any product. As you will see, the reasons I stay with a given piece of software are not always the most rational.

What's the Good Word?

First I'd better explain a bit about what is important to me as a Mac user. Partially to develop some insights for this column, I try using my computer for every task I can think of. But my bread and butter lies in words. So the most important program to me, by far, is my word processor and its attendant paraphernalia. In fact, my whole system setup is dictated by the amount of power I can muster in handling words with a Macintosh. If a 128K Mac with singlesided disks had been able to satisfy all my writing needs, I might have vawned at developments such as double-sided disks, hard disks, and Macintoshes with one or even two megabytes of memory. But as it turns out, word processing and handling the information I need for my writing require a lot of power. So I have found it worthwhile to upgrade my hardware constantly, at what turns out to be considerable expense.

In 1985 I submitted my original 128K Macintosh to a 512K upgrade, primarily to create *MacWrite* documents longer than laundry lists. When the Mac Plus came out I bought one, giving away my earlier model. This helped me to run *Microsoft Word* 1.0 with more reasonable speed. By then my documents were piling up, so I purchased a DataFrame XP20 hard disk. Incidentally, the recipient of my original Macwho uses it only for word processing—has found it necessary to upgrade to double-sided disks and a new ROM, install a Dove SCSI port, and purchase an XP20 (which is much noiser than mine—horribly so).

What is the word processing software that drives all this power? At the moment, *Microsoft Word* 3.01. Over the years, I have developed a real love-hate relationship with this program. At first, frustrated by the inadequacies of *MacWrite*, I eagerly awaited *Word*, and at its arrival in early 1985, I was as happy as an Alaskan pros-

DEFORMED.

Forms deformed? If producing a presentable form has always been a formidable task, you'll appreciate the scene on the far right. It's TrueForm™—the first and only Macintosh™-based system that lets you deftly deal with any form you feed it.

TrueForm is not just another forms software package, although it does offer you a choice of 30 readymade forms to use. And it's not just a design-your-own-forms program, yet it lets you do that, too.

If you fill out lots of forms, lots of different kinds of forms or forms supplied by other people, TrueForm will transform your working world.

Feed any form into
TrueForm's Image
Scanner, and it's
transmitted to your screen.
Complete with logo and
graphics. In seconds.

OF T	arget Ir	sur	ince	· A	Praferrio. Standard
Fa	mily Car Insurance	e Applica	llon		
Policy Term From 12.01 AM	MODAYWR MODAY		CY THE ST	motrum	Mency
S COVERAGE BOUNDY	THE THE		TION Month	ion, WI	
Name of applicant: (Please type		Grants	The contract of	100	
Acidnesis 1.25 Martin S.S.	cay Yadison	NAME OF THE	53704	CONTRACTOR	
County Land	Township & Fursi II	and described	CANADA PARA	Tel Numbe	555-1212
	ret National Bank				
COVERAGES AS DEFINED	LIMITS/OFDIGTIBLES	Auto 1	Auta 2 Ro	ste Factor	Total
A. [LIXBELLY	100/300/50	Constitution of		Marie Const	
Bodily Injury	50000	30 (400 to 100 t	0.00 T	SALES PER C	1000000
Property Damage	100000	200		22227	
B. MEDICAL PAYMENTS	17298			100000	
C COCCISION	Good	10050000		-	UNIVERSAL AND
Description of weblcfo(s):					
Car Treat Toude I	Body Type		Serial Number		Actual Cost
1 07 Merrari	Zegtarous		456/ABC78	9-22	100000
1		128	UT HEY	BH-32	N.
A Duf agent Inspect vehicle(s)?	ETYES [] No p	O NOT BINE	DAMAGE	WITHOUT	INSPEC:
B. Are yebide(s) used conversion		Yes, explain:	182203		
Have you been or are you now	THE RESERVE THE PROPERTY OF	El Yes	Dine		
		March States	Charles Charles	alt drive	10:5
Statement of all accidents ole: Premium must be board on it					
Have of Them	CONTRACTOR PROPERTY.	a) Yellatin	CONTRACT BUILDING	yes I	Of the Paper
Jos Cotant	1/1/00 / /3589	ding, 50%	DI O EF	Yes	A Company of the Comp

Next, you teach your computer how to fill out the form. You can supply information from your keyboard, or merge information from any database, or use TrueForm as an incredible forms-oriented spreadsheet.

Then print your perfect form with your LaserWriter® or ImageWriter®. Print the information on an original form. Or produce the entire completed form—graphics and all—on blank paper. Eliminate the problem of obsolete or out-of-stock forms inventories. Plain paper may be the only form you'll ever need again!

TrueForm makes it easy to set up a form, choosing the type font, size and style for each field. And with TrueForm you can capture and store both the forms you use and the data on them. Recall and reuse them. Save hours every day.

pector meeting his mail-order bride.

Well, the bride snored. The original Word was infuriatingly slow, especially in saving files. It was also cumbersome, with a list of commands as long as your arm. Yet the transition from MacWrite was worth it, since I gained features like multiple screens, use of long files, and cursor controls. Not entirely happy, I tested other programs as they were released. The best of those, WriteNow, gave me the speed I missed, but obstinately refused to give me keyboard control of the cursor-it didn't even support the arrow keys on the Mac Plus! Yet I might have switched if the Translator procedure to move my files over to Write-Now had not been clumsy and slow. So I stumbled along with Word until Microsoft's long-promised version 3.0 came along.

That upgrade of course was a disaster -too many bugs to mention (The Macintosh Bible calculates over 4001 glitches!), some of which actually caused me to lose files. But even with the bugs, Word 3.0 was the first fully powered word processor on

the Mac, and that means a lot to someone who makes a living by writing. So I stuck with it until Microsoft belatedly released a new version that, in theory, fixed the bugs.

I've spent a lot of time learning the fine points of the inelegant Word, and something very good will have to come along before I switch. But if one of the two main contenders for the heavyweight crown-FullWrite Professional or Word-Perfect-gives me more power, then switch I will. As I write, Labor Day is approaching and neither one, despite promises, has shipped in a final version. The demonstrations I've seen look good, but I learned with Word-the hard way-that you can never judge a program until you get it home and bang on it. Meantime, Word 3.01 is more than acceptable, though I have never had an adequate explanation of why it is unable to give me a word count of my document.

Blind Data

My requirements for a database manager are less demanding. I have little need for the very powerful programs like *Omnis* 3, Double Helix, or 4th Dimension. All I

want is something that will keep lists of my sources and various information about them (name, address, phone, comments) and allow me to search through the list and print things out in different ways.

My first Mac database was OverVue, and it seemed ideal at the time. I kept my source list on it and found its spreadsheetlike display perfect for tracking receipts for my tax returns. (In fact, when an IRS auditor came to my office demanding proof of my claims, I dazzled her with an OverVue presentation that put to rest any doubts of my veracity.) But as I used the Macintosh more, and the software base matured, OverVue's annoving failure to use many of the standard features of the Mac interface-particularly the %-Z key to undo a command-grew to loathsome proportions in my estimation.

After tinkering with some other options, I basically threw in the towel and switched my files to a program I knew to be adequate, but not much more: the database component of Microsoft Works. I think I might have made an error in not trying out FileMaker Plus, which some

(continues)

TRUEFORMED

The TrueForm system consists of the TrueForm software package, Image Scanner, MacScan™ software and

cables. It's complete and ready to use, for only \$2,095.



You can buy the TrueForm software separately for \$495, and design your own forms with any of a variety of Macintosh graphics programs. Or Spectrum Digital Systems will scan your forms.

Target Insurance Family Car Insurance Application POLOYTER FOR 1291 AM 9/31/86 to 9/31/88 AGENCY The Spectrum Agency LOCATION Madison, NI IS COVERAGE BOUND? YES NO Target Insurance Family Car Insurance Application 1. Policy Team From 12:01 AM 3/31/86 to 3/31/88 AGENCY The Spectrum Agency LOCATION Madison, MT 2. IS COVERAGE BOUND? YES NO 3. Name of applicant: (Please type or print) Joe Gofast Address 124 Hath St City Madison Zip Code WI, 53764 Township II Rural Route Tel. Number 555-1212 Vehicle #1 First Nat'l Bank COVERAGES AS DEFINED LIMITS/DEDUCTIBLES Auto 1 Bodily Injury 100/300/50 00000

TrueForm works with the Apple® Macintosh 512E, Macintosh Plus, Macintosh SE, and Macintosh II. (Scanner requires a SCSI interface.)

> Don't deform another form. Reform today with TrueForm, from Spectrum Digital Systems.

To order, or for a free full-color brochure, call toll-free: (800) 541-6661



2702 International Lane Madison, Wisconsin 53704-3122 (800) 541-6661; (608) 244-4300 (in WI)

Spectrum Digital Switzens, Inc. and TrueForm are trademeths of Spectrum Digital Switzens, Inc. MosSoan is a registered readomate of New Image Technology, Inc. Apple Manatonsh, Image Writz and Laser Writzer are trademetric of Apple Comparer. Inc. (1987, Spectrum). Digital Spectrum, Inc.





Within the next ten minutes, your entire concept f word processing will be turned upside down.

FullWrite Professional™ sets new standards for

ord processing.

It lets you handle words better, faster, more owerfully, with more versatility than any other ord processing program. But competing in toay's world requires even more. Now, documents eed the persuasive power of text and graphics ombined.

That's why FullWrite Professional easily turns our words into fully illustrated documents, and ven generates the graphics. Chances are, you'll ever need a page layout program.

FullWrite Professional is going to change erious writing forever. Here's why.

 WYSIWYG multi-column display. What you see on the screen is exactly what prints on the page. With automatic repagination, as you type.

 Full desktop publishing look. Drop in any shaped image, and watch the text wrap around it automatically. Create sidebars to mix multiple column sizes on the same page, as well as multicolumn headlines. Automatically revises layouts while you edit.

· An integrated MacDraw®-like drawing environment. With Bezier curves similar to Adobe's Illustrator[™] for smoother, more natural looking curves. Bit-mapped graphics are automatically converted to laser resolution objects for easy cropping, scaling, and re-sizing.

Change bars. Visually highlights changes

between drafts of a document.

 Posted notes. Append comments and observations directly to a document without affecting the text. Notes are automatically stamped with the time, date and name of person making the comment. Make comments individually or as a group.

 Browser, Quickly scan footnotes, posted notes, pictures, virtually any user defined category, through a special window, without looking through the entire document.

· Outlining. Sophisticated, powerful outlining that rivals the best stand-alone products.

- Automatic free upgrade. All registered owners receive a free media upgrade to the next version, automatically.
 - Power word processing features. All the stan-

Professional really is so damn good,



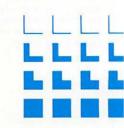
dard editing features plus: user defineable outlining styles; base style sheets; custom style sheets; find and replace by virtually any attribute; large screen support; spelling checker; thesaurus; automatic hyphenation; automatic table of contents and index generation; full undo of all options; bookmarks; references; glossaries; variables; mailmerge; full header and footer support with graphics; automatic renumbering of footnotes, endnotes, pictures and other user defined items; kerning; leading; guttering; column rules; strikeouts; small caps; multiple windows; show pages; full keyboard shortcuts; true laser grey scales; intelligent left/right formatting of pages; flexible printing; directly import other word processing documents and more!

FullWrite Professional is not just for professional writers and communicators. It's for managers, account executives, and secretaries, too. It is the word processing program for the future. Your future.

If you can operate a Mac Plus, SE, or II (anyone can operate a Mac), you can use FullWrite Professional. Right away.

It's what word processing was meant to be.
And it's going to change serious writing.
Forever.

Circle 204 on reader service of



FULLWRITE PROFESSIONAL

ANN ARBOR SOFTWORKS

2393 Teller Road • Suite 106 • Newbury Park, CA 91320 Phone: (805) 375-1467

Why Pay More? Shop Icon Review

Winning Disk Drive/Tape Combination



Data Cell 40 x 40T

The perfect fusion of storage, speed, and security
makes this rugged hard disk/tape drive combination from NuData an unbeatable value. Mac and
and attractive it fits neatly under your Mac and From NuData tion from NuData an unbeatable value. Compact and attractive, it fits neatly under your Mac and comes fully formatted and ready to boot.

This speedy 40-meg disk drive boasts a 35ms and 35ms a

access time that won't slow down as your disk fills up. The built-in 40-meg tape drive features up. The built-in 40-meg tape drive features superior error-correction capability to protect your superior error-correction capability to protect the superior error correction. superior error-correction capability to protect ye valuable data from corruption. And it uses the industry standard DC2000 table cartridge (#1766) industry standard DC2000 table cartridge (#1766) valuable data from corruption. And it uses the industry standard DC2000 tape cartridge (#1786/

\$23) to assure safe, convenient backup.

Unlike most tape drives, this one can be opened from the Desktop like any disk, which means easier from the Desktop like any NuData's excellent back access to your files. And NuData's excellent back access to your files. And NuData's easy to back up software (Omni Backup) makes it easy to hierarchy up by volume. file. class, changes only, or hierarchy up by volume. \$23) to assure safe, convenient backup. up software (Omni Backup) makes it easy to back up by volume, file, class, changes only, or hierarchy up by Partitioning and print-spooling software is also included

For added convenience, the SCSI address selecror aqued convenience, the 3C51 address selection and all power/selection switches and indicaalso included.

tion and an power/selection switches and indica-tors are located at the front of the drive. The unit's tors are located at the front of the drive. The units quiet internal fan and thick aluminum case mean your drive will run cooler, last longer.

our arive will run cooler, last longer. Shouldn't you trust your data to NuData? 2154 * Requires SCSI port & SCSI Device Cable #1656; 1-yr.

\$1,999

New Products from Icon Review

The Data Cell 40 x 40T gives you a speedy, rugged 40-meg hard disk plus 40 megs of secure, easily accessible tape storage all in one compact unit. Order yours today.

Avatex 2400 Modem a great value! Canvas Capetronic Modem unique wall mount Coach 3.0 ComServe GridMaker Mac DayDreams Mac Pro Football

#2158/\$269 integrated graphics program #2106/\$119 #2159/\$129 interactive spelling checker #2103/5 62 #2123/\$129 modem-sharing software build three-dimensional grids #2171/\$ 34 #2182/\$ 10 colorful Mac calendar #1176/\$ 32 a great Christmas gift!

McMax MicroMac 800K MinuteMan 600SS NetModem V1200 Read-It! **Smart Eyes** Smart Words UltraScan Monitor Video Works II Word Finder

transfer dBase III Plus to Mac #2196/\$219 800 K floppy drive #2185/\$184 power supply #2118/\$739 use with AppleTalk #2148/\$489 inexpensive OCR software #2173/\$165 speed-reading program #2138/\$ 49 2 versions /\$49ea. fun vocabulary builder Mac II color monitor #2166/\$749 #2181/Call animate Mac images electronic thesaurus DA #2132/\$ 39

FREE

New

Winter

Catalog



800/**228-8910**

Good anywhere in U.S.

Reflex Plus FromBorland International

\$169

\$53



Reflex has been transformed! The re-Sult? A fully relational database that combines a multi-file database with organizing, reporting, and analyzing capabilities. Significant new features include: a powerful GroupBY function that groups records as you need them without demanding complex syntax; Command-keyshortcut capability; and the ability to enter data for more than one database from within a single form, and to calculate field values as you enter data.

Best of all, Reflex Plus still incorporates the unique features and ease of use that made the original Reflex so popular: visually oriented programming that lets you build a relation simply by drawing lines between databases, ability to sort and search on as many fields as desired, and

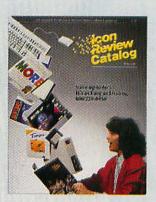
Search on as many neius as desired, and WYSIWYG entry-form and report design.

Take reflex action — order Reflex Plus. 2084 • Works w/512K, Plus, SE & II;

FREE Catalog

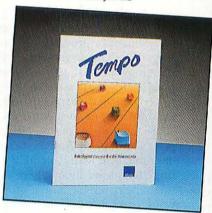
Order yours today and save money on more than 400 Mac products.

Call 800/228-8910



Tempo

From Affinity Microsystems

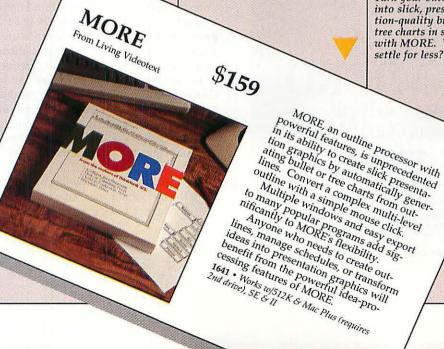


Use Tempo to become more efficient in almost any Mac application by automating repetitive operations that are tedious or time consuming. Simply record your activities (such as entering text or clicking on menu commands), then replay the sequence as one command.

Insert boilerplate text, format lengthy documents, or move data among programs with a single key-stroke. We use Tempo with Page-Maker to automate routine type formatting. By assigning keystrokes to sequences of point size, leading, and tabs, we avoid thousands of tedious manual commands.

What will you do with all the time you save using Tempo macros? 1307 • Not compatible w/Mac SE & II

> Turn your outlines into slick, presenta-tion-quality bullet or tree charts in seconds with MORE. Why settle for less?



Orders

800/228-8910

Good anywhere in U.S.

Monday thru Friday 6 am to 7 pm Saturdays 8 am to 4 pm (Pacific Time)

408/625-0465

POLICIES: We accept MasterCard and VISA with no added or service charge. Your credit card is charged for the full amount of your order when your order enters our system so that we can reserve your products at the prices quoted. Personal and company checks accepted; for faster delivery, send certified check, cashier's check, or money order. Sorry, we can't accept COD's.

- We accept corporate and school Purchase Orders (for a minimum of \$250 for initial orders, \$100 for subsequent orders) upon approval of credit.
- · California residents, please add 6% sales tax to your order.

GUARANTEE: All products shipped by Icon Review are new and guaranteed by the manufacturer to work. All defective merchandise will be repaired or replaced by the manufacturer. Icon Review cannot guarantee machine or color compatibility. Please select your merchandise carefully.

TECHNICAL SUPPORT: Need more information? Icon Review maintains a technical support team for your convenience. Call (408) 625-0465 if you need help — before or after

CHANGES & CANCELLATIONS: You may change or cancel your order at any time prior to shipment. Subject to avail-ability, orders are usually shipped within 48 hours; priority orders are shipped the same day if received before 2 pm PST.

RETURNS: All returns require a Returned Merchandise Authorization (RMA). Phone (408) 625-0465 to receive your Authorization (NMA). Those (400) 023-0405 to Techye your RMA. All returns must be complete, including all original warranties, manuals, documentation, and packaging. Please include a copy of your invoice or packing slip and a description of the problem. Due to software copyright laws, all sales are final. No returns authorized after 30 days from date of shipment, and no returns accepted without an RMA.

SHIPPING & HANDLING: A shipping and handling charge will be added to your order.

Domestic Service - 48 States & Canada
We will ship your products by UPS or US Mail Surface unless
you specify otherwise; Second-Day Air Service to Hawaii,
Puerto Rico, Alaska; Priority Next-Day Air Service, be sure to
have our salesperson check stock. Priority backorders are
shipped Second-Day Air.

International Service

Me serve most European locations (served by UPS) — including U.K., Scandinavia, France, Italy, Germany & Japan — \$40.00 minimum shipping & handling charge or 21% of the total purchase price, whichever is greater. We also serve Africa, Australia, Spain, Portugal, Mexico, South America, Philippines, etc. — write or phone for rates.

All prices, specifications, and availability subject to change without notice.

Macintosh is a trademark licensed to Apple Computer, Inc. Icon Review, 9570 Mid Valley Center, Carmel, CA 93923 © 1987 Icon Review

Circle 272 on reader service card



Question: When you use your LaserWriter or LaserWriter-Plus, do you ever wish that:

- · You could download more than three fonts at one time
- Your Laserwriter would take less printing time You used less disk space in your workstation
- You could find a quality expansion card to increase desktop publishing productivity

Solution: MASS ♦ FONTS ** for your LaserWriter. **

Tear into desktop publishing productivity with MASS FONTS. Finally a plug in expansion card for your LaserWriter MASS FONTS allows you to download up to 27 fonts at one time. That is almost nine times the current capability! When you purchase MASS FONTS you have the option to purchase a quality expansion card with or without 2 families of ADOBE TYPE Libraries," from Adobe Systems Inc.! And because we wanted you to get the most out of your productivity MASS FONTS was designed to save you almost one minute print time per downloadable font! Now get ready for even more performance! With MASS FONTS you will use 850Kb less disk space per workstation! More good news is that your Apple dealer can install MASS PONTS into your LaserWriter or LaserWriterPlus in just minutes.

LaserWriterPlus[®]

Ouestion: Have you ever wondered how it would be to have your Macintosh:

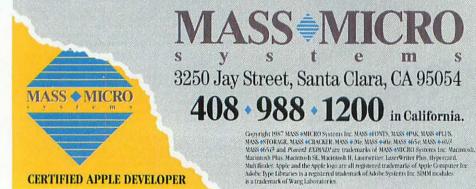
- · Run up to 8 programs at once
- Use a large super speed RAM disk
 Be fully compatible with all software
- Have true Apple A/UX, performance
 Run the new MultiFinder™ and make it fly
- · Be able to have faster networking
- Never say "NEED MORE MEMORY"
 Take full advantage of the new HyperCard™



Solution: MASS ♦PAK,™ MASS ♦PLUS™

Plug in memory expansion modules for your Mac Plus,™ Mac SE™ or Macintosh II™! Get ripping performance from your Mac by expanding the memory by 2 megs, 2.5 megs, 4 megs or even 8 megs! Whatever configuration you need to increase the productivity of your Mac, the MASS PAK or MASS PLUS will deliver the SOLUTION! These plug-in SIMM on modules use nothing but the latest state of the art I megabyte CMOS chips. Just open your Mac with our special MASS ♦ CRACKER™ (free with every MASS ♦ PAK or MASS ♦ PLUS) and install your Apple standard modules in minutes.

Tear into solutions with...



Circle 764 on reader service card

Steven Levy

people swear by, but at the time I was writing about Works, and it seemed very easy to transfer my OverVue files to see how the other database worked. It worked OK, so I stuck with it, figuring that one day I'd get a real database-one that not only did what I wanted, but was more powerful and so easy to use that I would be challenged to work with the program more creatively and get more out of it than simple manipulation of lists.

I think I might have found what I wanted in HyperCard. The only problem is a lack of good report-generation. I hope some sharp third-party developer comes up with an add-on program that gives HyperCard some simple-to-use yet flexible and varied printing capabilities.

Another database of sorts that I've been using, with much satisfaction, is the Rolodex-style desk accessory of SideKick. But my electronic Rolodex will probably be handled by HyperCard in the future, too.

Apply with Care

I also use spreadsheet, page-layout, and paint/draw programs. Though my spreadsheet needs are not terribly extensive-mainly running baseball statistics-I find that it's worth it to use the (highpriced) Cadillac of spreadsheets, Excel. Even with my modest demands, I can sense the benefits of Excel's superior power and speed. And the macros are so easy to create with Excel that I often find myself thinking about where a macro might help me-because it's fun to devise ways to use them.

With page-layout programs, again my needs are casual. I do biweekly newsletters for my baseball league. I like them to look great, but by no means do I aspire to professional quality. I find PageMaker does everything I want it to. Often I find myself forced to use it in inelegant ways, but I think the strength of the program is its ability to give publishing power to those uninitiated into the world of art direction, so its superior ease-of-use makes me choose it. If I were charged with producing an annual report for a large corporation, though, I would more thoroughly check out the field: ReadySetGo, Scoop, XPress, and the neglected professional-quality Just Text.

For painting and drawing, SuperPaint does the the job for me. But with the advent of cheaper laser printers, color dis-

(continues)

Steven Levy

plays, and new contenders in this field, I have no idea what I'll be using this time next year.

Utility Player

Finally, I have a complement of favorite utilities and desk accessories tailored to my work habits. I have to admit that I am not one of those who hungers for so many desk accessories that they require Suitcase, the admirable solution to those who surpass Macintosh's nominal 15-DA limit. But beside the important standards-Alarm Clock, Control Panel, Calculator, Key Caps, Chooser, and Scrapbook-I have found a couple of others to be essential. First of all, one would be caught short without a more powerful note pad than the one included in SideKick. Then one needs something to instantly snatch a graphic from a paint program; I use Art Grabber+, a MacroMind creation. I've also found Tempo-the program that lets you store keystrokes and mouse movements as macros-useful. But as the applications I use get more powerful, Tempo seems less advantageous and its limitations become more apparent. (Maybe Tempo II will rekindle the affair.)

The desk accessory I'm most infatuated with, though, is called DiskTop, from CE Software. From within a program, it allows me to search the hard disk for any file and to perform all kinds of Finder-like functions. As I become more comfortable with the MultiFinder-which allows instant access to the Finder no matter what application you're using-some of DiskTop's virtues may be obviated, and then I can get by with something simple like Apple's Find-File. But by then I suspect those wizards at CE Software will have come up with a new version of DiskTop that does even neater things.

Looking over this summary, I am not surprised to find-when I compare it to the best-seller charts in the back of the magazine, or to popular polls like the Macworld World Class Macintosh awards-that it bears strong resemblance to what you use. In the Macintosh world, heavy on word of mouth, cream rises to the top. But significantly, my allegiance to some of my most-used software-most notably the word processor-is soft. Even as I write this, some hot programmers are writing the applications, utilities, and desk accessories that will be my meat and potatoes next fall. Or if not meat and potatoes, at least chocolate mousse or fruit salad.

Making the decisions, as always, won't be easy. But it certainly beats the meager diet we all faced in 1984. □

Question: Did you ever wish you could have a hard drive system that would:

Give you a 30-day trial, money back guarantee

- · Be able to use a second drive for back-ups · Have a full public domain, shareware library · Not have to use unreliable tape back-ups
- Allow you to expand from 20 to 130 Mb
 Have each unit fully tested before shipping
 Tilt your Mac back for optimum viewing • Include 2' of cable with every purchase • Have a 24 hour tech support hotline • Have built in shock absorption

Solution: MASS ♦ STORAGE™ family. The Power2 EXPAND!™ Your Macintosh was made for expansion, and now you can have THE ABILI-TY TO EXPAND your hard drive system! The MASS • 20e,™ MASS • 40e™ and MASS • 65em Power2 EXPAND! These sleek and elegant drives sit perfectly under your Mac 512K, Mac Plus or Mac SE delivering power and speed. A blazing average access time of only 28 milliseconds is only one of the impressive features of these superior hard drive systems. Purchase a MASS • 20e and you may increase your system to as much as 130

megabytes of power at any time. Because inside this attractive case is the room to expand! Plug in a second drive at any time with no additional power supplies or extra software. Use the second drive as a storage device or the most reliable back-up device available. All in a distinctive angled case to give you optimum viewing of your Mac's screen.

Question: Do you ever think how great it would be to have a reliable internal hard drive system in your MacPlus or Mac SE that would:

- · Allow you to have both SE floppies to use
- · Allow you to expand from 40 to 130 Mb
- · Have built in shock aborbers for protection
- Have a 24 hour tech support hotline
 Have the ability to be installed in minutes
 Allow you to add a second drive at any time
- Be 100% compatible with third party enhancements
 Have the ability to use a 2nd drive for back-up
- · Not have to use unreliable tape back-ups
- Be fully tested before shipping
 Have a full public domain and shareware library
 Give you a 30-day trial, money back guarantee

Solution: MASS ♦ 40i^{2™} and MASS ♦ 65i^{2™} The Power2 EXPAND!™ The first of it's kind! A hard drive system that meets your needs today and fills your needs tomorrow. With our blazing fast internal hard drives we have made expansion easy. You can start now with 40Mb or 65Mb and you'll have the Power2 EXPAND with a second drive at any time. You have the option to use the second drive as a storage device or the most reliable back-up drive available. With the MASS • $40i^2$ and MASS • $65i^2$ compatibility is no

problem. Add your favorite 68020 card, large screen or even MASS♦PAK™ or MASS♦PLUS.™ And because there are *no modifications*, this affordable solution can be installed by your dealer in minutes.

Tear into solutions with...

3250 Jay Street, Santa Clara, CA 95054

800 • 253 • 8900

Copyright 1987 MASS & MICRO Systems Inc. MASS & FONTS, MASS & PAK, MASS & PLUS MASS 450 RAIL: MASS 460 RAIL MASS 400 MASS 400 MASS 456 PM MASS 45 Multilinder, Apple and the Apple logo are all registered trademarks of Apple Computer Inc. Adobe Type Libraries is a registered trademark of Adobe Systems Inc. SIMM modules is a trademark of Wang Laboratories.



Circle 764 on reader service card

Would yo In 1986, there was one dual-page display for the Macintosh" computer: ours. The choice was simple. Now, it seems, everybody and his dog makes one. So it gets confusing when you're shopping.

To make matters worse, there are very few places you can sit down and compare big screen displays.

But you don't have to buy "blind." Our MegaScreen" gives you advantages we can demonstrate here.

WYSIWYW (What You See Is What You Want).™

Other big screens give you a compressed display, showing 82 or even 94 dots per inch (d.p.i.). That means 10-point type looks like 7-point type. It's just too small to read comfort-

ably. Mega-

Screen lets

vou select

screen resolutions.

For exam-

There is a big difference between big screens.

Laser Output

If you want your big screen to show accurately what will be printed, you need our 75 x 75 d.p.i. resolution.

ple, when you work with graphics, you'll want accurate proportions. Our 75 x 75 d.p.i. resolution displays sizes and shapes perfectly. When you work

with a big spreadsheet, select maximum resolution: 75 x 87 d.p.i. (1024 x 900) and get even more data on the screen. You control it all with a menu.

There are one and two-page MegaScreens

Interface cards are dealer-installed typically in less than 10 minutes without voiding the Apple* warranty. MegaScreens are also available for the Macintosh Plus.

buy a b

reen v

up your slot by adding an interface card, so we've provided options. You co-processor, or you can select our modular card, which provides its own 'slot' for our MegaModules, such as a video

for the Macintosh SE and Macintosh II.



output (NTSC, PAL, and

standard Macintosh signal).

Unlike some big screens, we

screen: it can work in

tandem with your

MegaScreen to ex-

tend your work

space. Or, if that's

not useful to you,

we have something that will be: it's called Mega-

Talk. It's included in our

communicate with one or

more users through your Ap-

pleTalk® network. Even while running other applications.

Someday, other big screens may give you the control, the options

Video System and lets you

even give you options for your original Macintosh

MegaScreen 2001 lets you display 300% more data than the Macin-

and the additional communications features MegaScreen Video Systems offer.

> But if you need the increased productivity today, you can clearly see there's only one choice.

We Have Seen the Future.

20954 Osborne St., Canoga Park, CA 91304 Call us at (818) 407-0571 for your dealer. Telex: 650-0349 MCIMAIL

We remember the future.

With an SE, we know you're giving can choose a card with a 68881 math

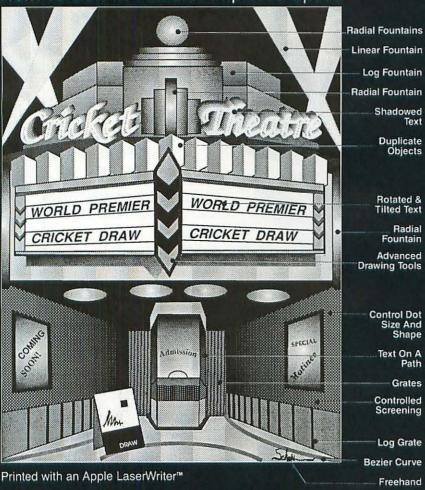


All screens shown are unretouched photographs of running displays. This ad and the desktop publishing example were created with Quark XPress.™ The CAD document was created with Versacad.™ MegaTalk and WYSIWYW (What You See Is What You Want) are Trademarks of MegaGraphics, Inc. Apple and AppleTalk are Registered Trademarks and Macintosh is a Trademark of Apple Computer, Inc. Versacad is a Registered Trademark of Versacad Corp. Quark and XPress are Trademarks of Quark Incorporated. MegaGraphics is an Authorized Value Added Reseller of Apple Computer Inc. ©1987, MegaGraphics, Inc.

cricket DRAW

FIRST IN SPECIAL EFFECTS

New! Version 1.1 Features Improved Speed



Every place you look you'll see rave reviews. Why? Because Cricket Draw has created a **new** state-of-the-art in Macintosh drawing technology.

Spectacular Special Effects

Cricket Draw's most universally acclaimed capability is its special effects generation. A quick glance at the example at left will give you a feeling for what can be accomplished with a little imagination and Cricket Draw. Graded Tones (fountains), Shading, Text on any path — all these effects and more are simple with Cricket Draw.

For Creators...

If you use your Macintosh to create graphics, then you certainly want the industry's most comprehensive set of drawing tools. You want the industry's most advanced text manipulation tools. And you want the ability to take full advantage of PostScript equipped devices. With the Power of Cricket Draw, you can finally unleash your true creative potential.

For Professionals...

Graphic Arts? Desktop Publishing? Cricket Draw allows you to create prescreened, camera-ready art, complete with typeset copy.



When it comes to Macintosh graphics software, there's just one name to remember — Cricket Software. Your local dealer will be happy to introduce you to the entire family: Cricket Graph, Cricket Draw, Cricket Presents..., and Cricket Device Drivers.



Cricket Software, 30 Valley Stream Parkway, Great Valley Corporate Center, Malvern, PA 19355 (215) 251-9890

Circle 684 on reader service card



We were ready for the Mac II almost before they were.

INTRODUCING THE NS8/16 MEMORY EXPANSION BOARD FOR THE MACINTOSH II

National has been providing highlevel add-in products for over a decade. We've helped well over a hundred thousand multi-tasking, multi-user business environments run faster and better. So even before Apple was ready with the new Mac™ II, we were ready with the expertise and technology to help it work harder.

In fact, we viewed the Macintosh™II as an 'open' invitation to provide power users with the right tools. And now we're proud to introduce the NS8/16 Memory Expansion Board.

GET 4, 8, 12, OR 16 MBYTES OF RAM FEATURING:

- Apple/UNIX* (A/UX) compatibility.
- RAMdisk software.
- Advanced NuBus[™] support.

Speed through memory hungry applications like: CAD/CAM. Desktop Publishing. High Resolution Graphics. Big

Macintosh and Mac are trademarks of Apple Computer, Inc. UNIX is a registered trademark of AT&T Bell Labs. NuBus is a trademark of Texas Instruments Incorporated. © 1987 National Semiconductor Corp.



Databases and Spreadsheets. Financial/ Accounting packages. And AI Programming. Just to name a few.

AND RUN A/UX MORE EFFICIENTLY

High-end applications will run at top performance levels under A/UX. Without modifications. And the NS8/16 remains completely transparent to the user.

In the Macintosh II operating system, the RAMdisk utility allows an application to treat the NS8/16 as one, or a series, of pseudo disk drives, accessing files at NuBus memory speeds.

So memory intensive applications will go much faster. As will switching between applications.

Circle 196 on reader service card

ALL WITH QUALITY AND SUPPORT YOU CAN RELY ON

Get a full 5-year warranty on the NS8/16. Backed by the leader in memory products. And customer service.

National is the company you should think of for add-in products. Now, with our NS8/16 Memory Expansion Board. And in the future — you can expect to see a whole line of add-in products for the Mac II.

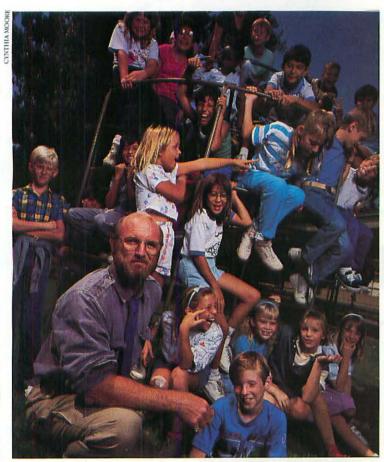
It's experience that lets us make a promise like that. So now that you have the Mac II ready to run, you know who can help you see how far it can go.

FOR MORE INFORMATION CALL THE COMPATIBLE PRODUCTS GROUP AT 800-345-4006 OUTSIDE OF CALIFORNIA CALL 800-538-8510



Macworld News

by Gil Davis



Bruce Fleury's students use the Macintosh to learn from an expert writer 30 miles away–distance is no barrier to their education.

Coaching Writers via Modem

Somewhere in San Diego sits writer Clarence Evans, a retired businessman with plenty of expertise and time. Thirty miles away his students know him only as their expert writer.

Evans is a key figure in the Writer Emeritus Project developed by sixth-grade teacher Bruce Fleury. Fleury uses retired writers who can't spend time in the classroom to assist his students with the content and the development of their written ideas. It's all made possible with the Mac.

Students do their writing on a portable computer and save their files on a Macintosh that remains connected overnight to *Red Ryder Host* communications software. Each writer emeritus downloads student files via modem and makes appropriate comments.

The writer then uploads the files to the classroom Macintosh, and students can revise their original drafts on their portable computers the following day. Revised versions are then returned to the writer emeritus for further comments.

Fleury, who has received awards from California educators for his innovative use of computers in education, developed the Writer Emeritus Program based on research that says writing is at its best when students go through multiple revisions involving interaction with others.

Navigator to the Rescue



One of the most popular online hang-outs for Macintosh users

has been MAUG, a special interest group (SIG) on the Compu-Serve Information Service.

MAUG is an electronic repository of goodies. You can swap information, tips, and gossip with fellow users, as well as download software from one of the most extensive Mac shareware and public domain collections around. But until now, it has been rather hard to maneuver around CompuServe's SIGs.

Mac users in particular, accustomed to the intuitive interface of their computers, have been frustrated with the unforgiving commands and editing protocol CompuServe requires. Since online time is costly, Mac users have found themselves wasting money just getting the hang of things.



That's changed. Navigator, a shareware program written by Michael C. O'Conner, allows you to automate not only your MAUG visits, but all your CompuServe activities. Before logging on, you plan your session using the familiar Mac interface.

Navigator then performs all the tasks you'd otherwise fumble around with. It receives your mail, sends letters, searches libraries for new software, and leaves messages for your friends.

When the session is over, you can use this new information for your next session. For instance, if you got electronic mail from a business associate, you could reply to it offline, using standard Mac editing commands. The next time you send *Navigator* to Compu-Serve, it posts the reply.

(continues)





Why you should buy a mouse with no moving parts.

One simple reason. No moving parts. And that means no problems.

Introducing the A+ Mouse from Mouse Systems. The A+ Mouse is an all optical mouse with no moving parts. It doesn't depend on friction, so there aren't any parts that can slip, get dirty or wear out. It doesn't have a rolling ball, a commutator, little teeny bearings and shafts, or plastic housings housing who-knows-what.

Instead, our mouse uses a mirror-like pad that reflects a tiny beam of light to track your slightest hand movement. No other mouse moves as fast or is as reliable.

Especially when you're moving around in spreadsheets and graphics software or editing text and manipulating data. That's because our mouse gives you up to 200 counts per inch and digital accuracy for exceptional cursor control.

Plus solid state electronics to ensure precision. No matter what Apple system you have, we have an A+ Mouse that's right for you.

The A+ Mouse is compatible with the Macintosh 512K, Macintosh Plus, Apple IIc and Apple IIe (which requires the Apple mouse card).

The A+ Mouse ADB is ideal for the Macintosh SE,

Macintosh II, and Apple IIGS.

The A+ Mouse. The mouse you'll never have to clean, repair or replace. It's so reliable, it's the only mouse which comes with a Lifetime Warranty.*

See your local dealer for a demonstration.

Today.

A+ MOUSE MOUSE SYSTEMS



Macworld News

Navigator performs your online sessions in a fraction of the time they usually take. If you use CompuServe often, the \$40 fee for Navigator (\$35 if you download it from the MAUG data library and register later) is a good investment. Contact Leptonic Systems in White Plains, New York, at 914/ 682-0377.—Steven Levy

Gray-Scale Scanning

The big talk among scanner manufacturers these days is about

gray-scale scanners. In the past, scanner output was limited to 300 dots per inch. That was fine for laser-printed copy, but not for Mac documents printed on 2540-dpi resolution. Using such a scanner, you can produce halftones that compare favorably with traditional PMT-type photostats.

Microtek, Datacopy, and New Image Technology have announced new scanners to be released by the end of the year. Abaton is shipping its new 4-BPP software for the Scan 300/FB, along with a SCSI interface for increased speed. Most of these new scanners are compatible with *ImageStudio*, Letraset's powerful imageprocessing program, and support TIFF and EPS formats.

Scanner-created negatives and prints could conceivably take over the stat business. But there are problems. Besides the fact that an 8-BPP scan of an 8-by 10-inch image takes more than 1MB of memory, the biggest stumbling block is the Linotronic's slowness when



Scanners from Datacopy, Abaton, and Microtek bring a new level of reality to desktop publishing by reproducing gray levels.

Linotronic phototypesetting equipment.

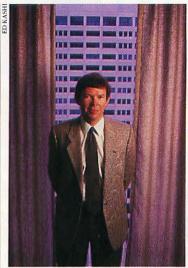
New scanners (or, in some cases, simply new software) record several levels of grayscale information for each pixel. The scanners interpret this information based on the desired screen ruling, contrast, and brightness, and the type of output device being used.

An 8-bits-per-pixel (BPP) scanner can produce 256 shades of gray, taking full advantage of the Linotronic 300's

producing digitized photos. A large image with lots of gray-scale information can take several hours to produce. Given the high cost of renting time on a Linotronic, it's still much more economical to convert photos to halftones at a stat house rather than print digitally on finished pages.

But since halftone production is one of the last big hurdles to attaining affordable desktop publishing, it's sure to be the focus of new products.

— *Jim Morton*



Phil Lundeen knows how Works works because he coauthored the popular integrated software—which now has macros.

Macros for Works



Lundeen and Associates has announced *Command*, which

opens automatically with *Microsoft Works* and provides each module with macro capabilities comparable to *Excel's*. This will be a valuable asset in *Works'* upcoming competition with Lotus's new integrated package, code-named Galaxy.

Over 100 functions are included on the *Command* disk, in addition to the ability to address all the database and spreadsheet functions included with *Works*. A macro recorder is provided, allowing you to perform a task and then generate a macro to do it automatically.

While most *Works* users will never write a macro, very likely they will still want *Command*. Several macros will be included in this \$99.95 package, and more are certain to become available. For more information, call Lundeen and Associates in Oakland, California, at 415/893-7587.—*Scott Beamer*

1200 DPI on Paper?

Many of us are more than pleased with 300-dpi laser printer output for letters, memos, and illustrations.

But 300 dpi can definitely lower the quality of a well-printed publication because the jaggies become apparent under a magnifying glass. That's why some professionals are looking more closely at higher-resolution printers like the Varityper VT-600, which offers 600-dpi resolution and lists for \$18,500.

Printware has taken another step forward in the quest for near-typeset-quality resolution with its 1200- by 600-dpi laser printer, the 720IQ.

Although the list price of this PostScript-equipped printer is expected to be about \$16,500, its output quality is said to come close to that of typesetting equipment costing twice that much.

The 600-dpi resolution gives the printer an 8-pages-perminute (ppm) output, compared with 2 or 3 ppm if the vertical resolution is set at 1200 dpi. However, 1200 dpi for the



horizontal mode greatly increases the appearance of the type.

So far, the greatest interest in Printware's 720IQ printer has come from publishers and typesetters who must pay a minimum of \$1 per page for typeset-quality output. With the 720IQ, there is no need for the costly photographic papers

(continues)

LEGAL BILLING

Legal Billing is a time billing package designed specifi-cally for attorneys and accountants, Legal Billing is a full featured system, and yet it is incredibly easy to use. Most firms are up and running in 30 minutes or less! Here's what Legal Billing can do for your office:

- ➤ Allows simple and fast entry of information, automati-cally sorted by date, client, employee and activity
- Customized productivity reports
- ➤ Automatic interest added to past due balances
 ➤ Client statements formatted in most any way
- Multiple billing rates for each employee
- ► Aging Report can be customized
- ➤ True Work-In-Progress feature holds activity details from month to month

LEGAL BILLING

Legal Billing II is an easy-to-use, advanced system designed for small to medium size firms. Includes all features of the basic system plus much more!

- ► Full trust account reporting ► Archiving of billed services and costs
- ▶ Additional billing options
- ► Handles more employee and
- activity codes Multi-user option available

\$895.

\$1295. Legal Billing II + - Multi-user version



roject Billing is a time billing package designed for ad agencies, graphic designers, architects and engineers. This package will track all aspects of your project billing including budgets for time and expense, actual costs and billed out amounts for both employee and expenses, and project profitability.

It will also automatically mark-up expenses, and provide productivity reports by employee or project, plus print your client bills in a variety of formats.

This is how Project Billing can help you office:

- ▶ Tracks employee productivity by cost and billable rates
- ► Automatically marks up expenses
- ▶ Provides profitability analysis by project
- ▶ Tracks budgeting of time and expense
- Prints bills and adds interest
- ▶ Work-In-Progress holds detail from month-to-month
- ► Enables progress (partial) billing, while holding all detail
- ▶ Multi-user option available

\$1095. Project Billing +

- Multi-user version

BULK MAILER

NEW VERSION! Bulk Mailer is a powerful program specially designed for managing lists. Bulk Mailer does everything you want in a mail list program, including duplication elimination, zip and alpha sorts, 1 to 4 up labels printed, easy-entry defaults, multiple label format, plus, much, much more.

This is the only program to offer all these features.

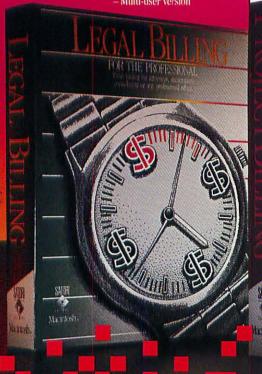
- ► Duplication elimination

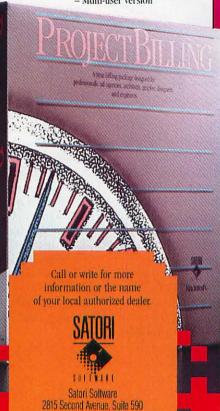
- ▶ Zip or alpha sort
 ▶ Car-rt sort or zip + 4
 ▶ 1 to 4 up labels or roster format
- ▶ Powerful coding capabilities
 ▶ Sophisticated global editing and deleting
- ► Mail merge with Microsoft Word
- ► Easy-to-use entry defaults
- ► Coding and date expiration fields
- ► Large record capacity (up to 90,000 names)
- ▶ Hard disk compatible

Now shipping version 3.0

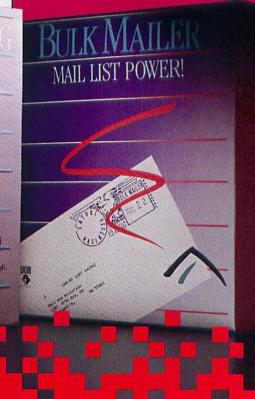
\$149. Bulk Mailer - up to 8,600 names

\$350. Bulk Mailer + up to 90,000 names





Seattle, WA 98121 206/443-0765



Macworld News

and chemicals required for phototypesetting.

In addition to its much higher resolution, the 720IQ differs from most other laser printers in another important respect: its built-in PostScript interpreter and fonts don't come from Adobe. It seems PrintWare decided to write its own Post-Script-compatible interpreter when it was unable to reach a satisfactory royalty agreement with Adobe.

The 720IQ includes 5MB of RAM and a 20MB internal hard disk. Can we now look for neartypeset-quality laser printers at lower and lower prices? For more information, call Printware in Saint Paul, Minnesota, at 612/454-9522.

Flying High

signer" is the unusual job description belonging to Martin Hollmann of Cupertino, California: the home of Apple. Given Hollmann's proximity to Apple, it's not surprising that the Macintosh has become an important member of his design team.

"Free-lance aircraft de-

In fact, Hollmann is so enthusiastic about using the Mac to engineer airplanes that he's written and published a 260-page book called *Modern Aircraft Design*, which tells how to write aeronautical engineering software and how to use the Macintosh as an aircraft-design workstation. The book is so popular that he sold 100 copies at this year's experimental aircraft convention in Oshkosh, Wisconsin.

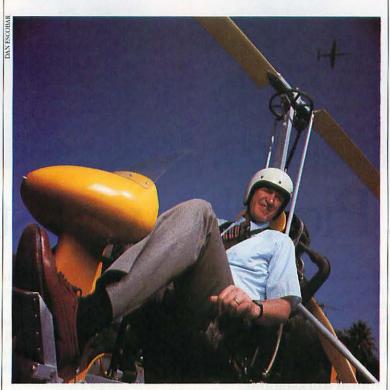
According to Hollmann, the Macintosh enables him to do a preliminary evaluation of an aircraft design in three weeks and to complete the structural design in two to three months. Last year Hollmann and his company, Aircraft Designs, con-

tributed to the plans for 20 planes, using an unenhanced 512K Mac, a 10MB hard disk, and assorted engineering software.

He's written some of that software himself and sold it to many other experimental aircraft enthusiasts. For example, Hollmann wrote a program called *Composite Wing Optimization*, which determines the wing structure: its sparring, ribbing, and skin thickness. Other software packages he uses calculate the aerodynamic

alyzed include the aerobatic Rebel 200 Prowler, a twoperson, 300-mph airplane powered by a Chevrolet engine.

Hollmann is waiting for more engineering software packages to become available before he switches to the Mac II. The absence of FORTRAN compilers for the Mac II has really slowed development of such programs. Meanwhile, the 512K does just fine. For more information call Aircraft Designs in Cupertino at 408/255-2194.—*Brita Meng*



Martin Hollman's Mac-based aircraft designs take him to new beights, while on the ground his 512KMac awaits a new challenge.

center of a plane and print out full-size airfoils on the ImageWriter.

Another mainstay of Holl-mann's software arsenal is MSC Pal2, from MacNeal Schwendler of Los Angeles. MSC Pal2 solves stress problems, such as determining the strength of a welded-tube structure.

Among the planes Hollmann has analyzed is the two-person, 230-mph, Lancair 200, the most popular kit plane on the market. Other planes he has an-

Apple File Exchange



Apple File Exchange (AFX) is a new and important part of Apple's

strategy to link the Macintosh with the rest of the computer world.

Using AFX, you can quickly and easily convert files or documents between Macintosh, MS-DOS, and ProDOS systems.



AFX translates files or documents created by one application into the format required by another application, saving the time and effort of reentering information into a new application.

While the Apple PC 5¼-inch drive and 800K 3½-inch floppy drive can be used to share data between Mac, PC, and Apple II environments, AFX can translate the documents between formats. That means a document created in *WordPerfect* on the IBM PC can be read and translated into *Microsoft Word* on the Mac and to *AppleWorks* on the Apple II.

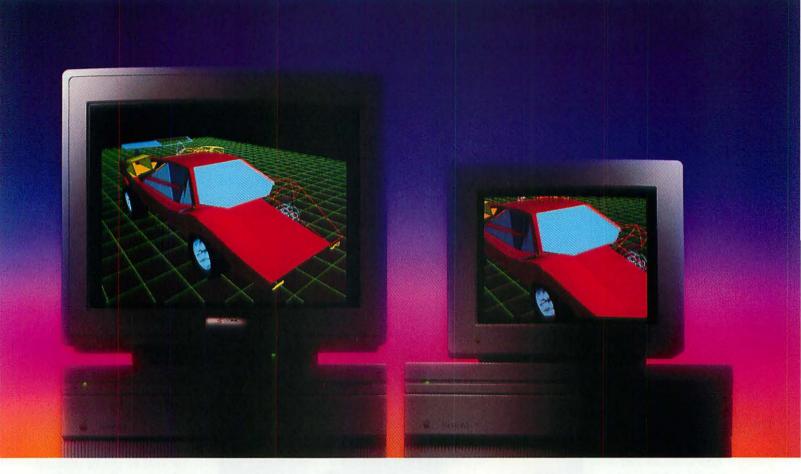
You are not limited to using floppy drives for transferring data—you can use AFX with data files transferred to the Mac via networks such as AppleTalk, 3COM+, and AppleShare or modems.

AFX comes with an Apple PC card and a Mac II PC card. This utility is being given away as part of the system software. You can write your own translators for transferring data from one system to another.

You can save translator configurations to customize the conversion process for commonly exchanged documents, and you can translate large batches of files at a time—even documents from different applications.

The AFX software includes three translators: a bidirectional translator for text-only (ASCII) formats of MS-DOS, ProDOS, and Macintosh; a binary translator for transferring

(continues)



Quick. Pick the workstation.

It's the Macintosh™ II with the big, high-resolution, high-performance 19" display.

Available only from SuperMac Technology.

Graphics power that turns a great computer into a great workstation. The result: The ultimate system for running Mac software. Because it is, simply, the ultimate Mac.

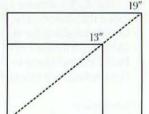
How to create the Macintosh workstation:

Just install one of our workstation video boards in any Mac II slot.

Then connect your monitor. Turn on the power, and you're *running*. No special software. No jumpers.

For color, our *Spectrum*[™] system brings you 1024 x 768 resolution with up to 256 glorious colors at once, from a palette of over 16 million. Or 8-bit gray scale, if you wish.

For monochrome, you get even greater resolution of up to 1365 x 1024 pixels with our low-cost *Graphix*™



Spectrum offers double the visual area of Apple's color display. So you see much, much more of your work.

system. That means that Macintosh can display a two-page spread with room to spare. *And* you can still read the fine print!

Because SuperMac video boards are programmable, you can even start small and upgrade later. Choose from Apple's 640 x 480 monitor, or choose an 800 x 600 multisync-type monitor for 50% more resolution. Or for the ultimate workstation, choose SuperMac's 1024 x 768 19" workstation monitor.

See SuperMac video before you commit to any video for your Macintosh II.

Only SuperMac video gives you highest resolution. Only SuperMac video gives you your choice of

monitors, up to 19 inches.

Only SuperMac video runs all the standard Macintosh software and A/UX, Apple's implementation of the UNIX operating system.

(And for specialized broadcast applications, we've even included genlockable NTSC output.)

See SuperMac video at your nearest SuperMac video dealer. And see the difference between a great computer and a great workstation.



295 N. Bernardo, Mountain View, CA 94043, (415) 964-8884

Macworld News

documents without modification and importing them directly into another application; and a DCA-RFT/*MacWrite* translator that works bidirectionally between IBM Document Content Architecture and Revisable Form Text (commonly used in the PC environment and in *MacWrite*).

AFX is essentially a platform on which enthusiasts and developers can build translators. One such translator is *MacLink Plus* from DataViz, which provides translations from popular PC word processing, spreadsheet, and database programs. The standard architecture provided by AFX assures compatibility with other translators developed for the Mac.

While Apple doesn't mention this, there is no reason why you can't build a translator for Wang, NBI, or DEC. This integrated approach to computing and data sharing will certainly propel Apple way ahead of the competition. Apple File Exchange works on a Mac 512K Enhanced, a Mac Plus, an SE, or II. Centram and Ungermann-Bass offer similar products. —*Prasad Kaipa*

Undercover at the Factory

"Automate the factories!" has been a rallying cry for American manufacturers trying to compete in world markets. Their goal is computer-integrated manufacturing (CIM), which brings all aspects of a manufacturing operation—engineering, manufacturing, purchasing, and finance—under the control of computers.

Although over one hundred fifty versions of PC-compatible computers are available for factory use, there hasn't been a Macintosh version—until now.

Dubbed the AI 90, the first industrial Mac has emerged from the robot-populated basement of Automatix in Billerica, Massachusetts.

The AI 90 is actually a Macintosh II that's been repackaged to work in the much harsher environment of a factory, where grease, dirt, vibration, and electrical interference thrive. Some factory computers are even regularly hosed down with water. The AI 90 NEMA-2 cabinet keeps the Mac II internals safe from such hazards.

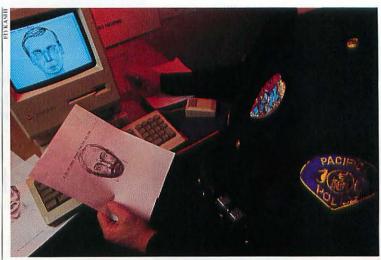
Automatix, an Apple VAR, has a lot of experience in the factory automation business. The company's robots and vision systems are already used in automobile, electronic, and aerospace factories for assembly, welding, and inspection.

The ruggedized Mac II is expected to be successful for the same reason Macs have proliferated in less hostile environments—ease of use. According to Joe Campbell, Automatix's general manager of industrial control, the PC interface is difficult for factory floor workers to



This hardened cover bides an industrial-strength Mac II ready for tough conditions.

learn and use because they're accustomed to panels of buttons and flashing lights—not a cryptic set of commands. The Mac interface offers an easy-to-use alternative for those who have traditionally been unable or unwilling to interact with personal computers.



A police officer bolds one of the 137 trillion faces available from a new program that facilitates drawing composite sketches.

A typical AI 90 configuration includes 1MB of RAM, a 3½-inch 800K floppy drive, and a monitor. It costs about \$8500—some \$1000 less than the IBM 7552 industrial computer. For more information call Automatix at 617/667-7900.

-Brita Meng

The Eyes Have It



Supposedly, there are 14,580 noses, 6576 mustaches, and 864

mouths contained in Visatex's *CompuSketch*, a program that stores over its 110,000 individual facial features capable of generating 137 trillion distinct faces for creating composite sketches of criminal suspects. But no other features even come close to the total number of eyes: 85,000.

The drawing process begins with a police officer asking a witness questions prompted by *CompuSketch*, then using the mouse to select various facial features.

Although *CompuSketch* is simple to operate and requires no artistic experience, its size is staggering. There are 23 double-sided disks that contain the

program and its 110,451 facial features. Once all the features are selected, *CompuSketch* pulls together a composite sketch and prints it in about 30 seconds. Subsequent feature changes take about 3 seconds to redraw.

The recommended system for *CompuSketch* is a Macintosh Plus, a 20MB hard disk, and an ImageWriter II printer; the total cost is about \$3500. For more information, call Visatex in Campbell, California, at 408/866-6562.

Desktop Newspapers



Weekly and small daily newspaper publishers across the country are

turning to Macintosh and Laser-Writer systems to create their broadsheets and tabloids. As new equipment is introduced—such as larger-format, higher-resolution laser printers and file-server networks able to link hundreds of Macs together—the Mac becomes a practical alternative to current, more expensive systems on increasingly large newspapers.

(continues)

The

Free Offer. San Jose, CA 95161-0370 (408) 435-3866 Just

Got

Better!

Simply Place an Order From this Ad and We'll Include our 52 Page Full Color Catalog FREE! Featuring over 700 Computer Supplies and Accessories (after good while supply lasts)

Free Offer

The Mac Supplies



SONY OR 31/2" SS/DD maxell. 3½" DS/DD

1.09 1.02 1.59 1.49

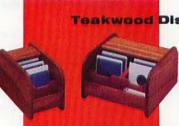
Call for Larger Quantity Discounts

100+ 31/2" SS/DD .95 31/2" DS/DD 1.19 1.15 Boxed in Tens - Minimum Order: 20



AMARAY Media Mate 3 Holds 30 31/2

\$7.95 with lock \$9.95



Teakwood Diskette Files

Holds 45 31/2" \$16.95 Holds 90 31/2" \$26.95

Holds 135 31/2" \$36.95

Mac-Pacs Boxed in 50's - Labels Included

SONY " Maxell.

31/2" SS/DD 31/2" DS/DD

3½" SS/DD 3½" DS/DD Best

.99 .95 .89 1.291.251.19

> 50+ 100+ 400+ .95 1.09 1.05



MicroComputer Accessories,Inc.

Deluxe Rolltop File

Holds 55 31/2"

\$15.95 with lock

\$17.95





7 am to 6 pm Pacific Time 10 am to 3 pm Saturdays Order Now

1 (800) 351-BEST 351-2378 1(800) 451-BEST In California

FAX (408) 435-3002 Get your FREE 52 Page Color Catalog with Order

Minimum Order: Orders under our \$25.00 minimum will be charged a \$2.00 handling fee.

Payment Terms: Our terms are Visa, MasterCard, C.O.D. or Prepaid. Corporations rated 3A2 or better, government agencies

and schools may send in purchase order on a Net 30 Day basis. C.O.D. orders add \$4.00. No sales tax outside CA. Shipping Charges: Shipping charges are \$3.00 per 100 diskettes. Accessories and other items are charged a flat \$3.00 charge per order (within the Continental U.S.). APO, FPO, AK, HI, PR and Canada orders add an addition 10% to cover PAL and insurance. All other international orders must be accompanied by a Visa or MasterCard so that we charge the correct postal charges. Warranty: In no event shall Best Computer Supplies be liable or responsible for incidental or consequential damages of any kind. Satisfaction is guaranteed on all products.



Mouse-Pad In Black-Blue-Grey-Brown-Red \$5.95

Tef-Glides Teflon Mouse Feet Make Your Mouse Glide.

\$2.95



Add a bit of Personality to your Mac \$5.95

disk-book from MicroStore.

Disk Book 10.... \$9,95 Holds 10 31/2"

Disk Book 32 ... \$19.95 Holds 32 31/2"

Disk Book Plus . . . \$19.95 Holds 16 31/2", Plus Manuals, Pens, etc.

Available

in

Blue

Red

Burgundy

Grey





·Totally Silent

·LED (so you know the silent drive is running)

Compact, style matches Mac

\$199.00

·12 month warranty



Beck-Tech Fanny Mac Cooling Fan prolongs Mac life. Cools by 50° or more.

\$74.00

Item! MORE OF THE BEST MACCESSORIES + over 700 more can be found in our new 52 page full color catalog for just \$2.00

Turbo 2400 Mac-Modem

- *2400/1200/300 bps
- · 5 Yr. Warranty · Help Screen \$249.00 Includes cable and software
- Mac Plus Carrying Case . . . 59.00 · Fully Hayes Compatible Imagewriter II Carry. Case.. 49.00 Speed Upgradeable to 4800, 9600 and 19,200 bps

Mac & Keyboard Cover ... 12.50 Mac Plus & Key, Cover. . . . 12.50 Imagewriter I & II Cover 7.50

Mac Carrying Case \$55.00

DataShield 200 Watt Back-up Power Source \$299.00

Copy II Mac Software. . . 24.00 Curtis Univ. Printer Stand. . . 14.95 Glare/Guard for Mac. . . . 24.95 Mac Plus to Imagewriter II 8' Computer Cable . . . \$12.50 Mac Plus to Hayes Modem

8' Computer Cable . . . 12.50 Inland 6 Outlet Surge Protection. . . . 19.95 Imagewriter Ribbons Black (2-5) 3.45 (6+) 2.95

Color 6 Packs 20.70 Imagewriter II 4 Color. . . 13.95 MacInker Ribbon Reinker. . . 44.00

MacInker Black Ink (2 oz.) . . . 3.00



31/2" Head Cleaning Kit. . . 9.95 Circle 373 on reader service card



Hot type has no place at Jim Whelpton's weekly newspaper, which uses cool Macs to produce stories, pictures, and ads.

A recent conference of the National Newspaper Association attracted 120 publisher and editor members, who shared their fascination with desktop publishing. Jim Whelpton of Tennessee, publisher of the Bolivar Bulletin-Times, described how an \$11,760 basic plain-paper system, built around two Mac Pluses and two LaserWriter Pluses, can produce a weekly broadsheet of about 30 pages. During the past year, his deluxe \$13,600 system has shaved \$4000 off the cost of phototypesetting papers and chemicals alone.

Also reported at the conference: due mostly to major flooding that wiped out their old typesetting systems, one third of all newspapers in West Virginia now use the Mac; without it, in fact, some of them would actually have gone under.

But desktop publishing is not just for small publishers, a point driven home by the presence of a *New York Times* representative at the conference. Attendees extolled the advantages of being able to typeset an ad while the advertiser waits for a proof, and using a program like *Cricket Draw* to create a circular logo in less than two minutes instead of the usual two hours.

Conference attendees also acknowledged that the low cost of desktop publishing systems can be a double-edged sword—in that it invites competitive start-ups. A typesetting and printing system that 20 years ago cost up to \$100,000 now runs about \$25,000 with a CompuGraphic and offset press.—Stuart Silverstone

Color In, Color Out



Here's a Mac II program to keep your eye on. It's *Pixel Paint*, a

bit-map paint program from SuperMac, which will be available in time to add color to the Christmas holidays.

Pixel Paint gives you full access to the Mac II's 16.8 million colors. It can display up to 256 colors and 256 shades of gray at any one time, and it reads and writes files in the Paint, PICT, and EPS formats. The program can print to an ImageWriter, a LaserWriter, or a film recorder.

Especially noteworthy is *Pix-el Paint*'s airbrush. Its pattern can be changed in three dimensions and its color blending capabilities are based on a wide selection of standard palettes

that can be quickly modified. Other special effects include fountain shading between two colors, edge-smoothing, a shadow effect, and a number of paint-blending techniques.

Another Mac II color paint program that's available now from Computer Friends is Modern Artist. Computer Friends has offered color to Mac owners for some time with its \$2000 SuperChroma Color System, which comes with a program called ChromaPaint. ChromaPaint and Modern Artist are the same, except that Modern Artist runs on the Mac II (the files are not interchangeable).

An optional \$99 program from Computer Friends called *Color-Sep* creates a four-part PostScript file from a screen image for producing color separations on the LaserWriter or other PostScript devices.

Shinko's CHC-335 200-dpi thermal printer can be interfaced to the Mac with a Computer Friends driver. Color illustrations created with Visual Information's *Dimensions* can be generated with CalComp's 200-dpi PlotMaster thermal plotter/printer, as well as with JDL's 850 GL + plotter/printer, a 14-color, 180-dpi device. *Dimensions* also interfaces to Matrix Instruments' SlideWriter digital film recorder to produce high-resolution slides.



Colors come to the Mac II in a big way: 16.8 million of them.

And this is only the beginning. Drivers for other color output devices will appear in coming months. For further information on the products listed above, contact CalComp in Anaheim, California, at 714/ 821-2142; Computer Friends in Portland, Oregon, at 503/626-2291; JDL in Westlake Village. California, at 805/495-3451; Matrix Instruments in Orangeburg, New York, at 914/-365-0190; Visual Information in La Puente, California, at 818/-918-8834; and SuperMac in Mountain View, California, at 415/968-8884.

Convenience with Power

Some things just get better and better. Witness the offerings of Donald Brown's CE Software, which is renowned for such early and popular shareware as MockPackage, Calendar Maker, and Icon Mover.

The company is now offering a powerful program called *QuicKeys*, which simulates a whole series of mouse clicks, drags, and typing following a single keystroke. In addition, *QuicKeys* fosters consistency across applications by letting you assign the same keystrokes to similar menu and mouse functions.

Although *QuicKeys* will be available commercially, Brown's legacy is a raft of shareware beginning with *Desk Accessory Mover*; which came out just a few months after the Mac's March 1984 introduction. It was supplanted by Apple's Font/DA Mover.

Next came MockWrite, MockPrinter, and MockTerminal, which provided (respectively) text, print, and telecommunications functions. Mock-

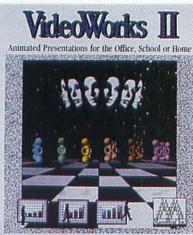
(continues)

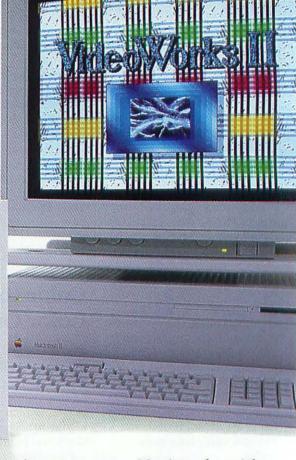
It's one thing to have great graphics. It's something else to make them move.

VideoWorks"II for:

- Business Presentations
- Animated Slide Shows
- Multi-media Storyboards
- Educational Movies
- Entertaining Animations
- Suggested Retail Price \$195







MacroMind has been making the Macintosh look great for years. Now let us make you look great with VideoWorks™ II! The Overview window creates slide shows that can include animation, wipes, fades, timers or sound. VideoWorks™II works great with the Macintosh II (in either 16 or 256 colors) or the Macintosh 512, Plus, SE.

Create animation on your Macintosh with VideoWorks™ II. Take any artwork you have and create animated presentations, storyboards, educational courseware, point of sale displays or music-videos. From MacroMind® Inc., the creators of MusicWorks™, M.U.D.™, Art Grabber™, ComicWorks™, GraphicWorks™, Maze Wars+™.

Original VideoWorks owners can upgrade to VideoWorks II for \$100. Send your check, VISA or MC order along with your VideoWorks Movies disk.

WideoWorks II

VideoWorks[®] II © 1987 MacroMind[®] Inc.., 1028 W. Wolfram St., Chicago, IL 60657 (312) 871-0987. Comes with three disks: Program & Tutorials, Clip Amimation, Artwork & Movies and a Guided Tour training disk. Not copy protected. Distributed by Brøderbund Software. Ask your local dealer.

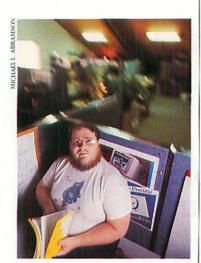
Circle 781 on reader service card



Macworld News

Package Plus is currently in version 4.3.4, and it's priced at \$35. It remains indispensable for many Mac owners.

Subsequent offerings from CE Software include Calendar Maker 3.0 (\$39.95), which uses icons to represent events within a calendar that can be customized both by graphics and text; and MacBillboard 4.0.1 (shareware with bonuses, \$35). which is an important paint program that includes zoom features and split-window editing capabilities. Mass-Copier 1.2 (shareware with bonuses, \$20) allows you to copy disks for multiple distribution.



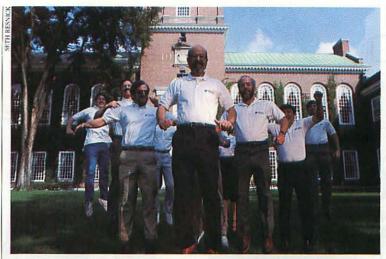
Don Brown's latest program lets everyone be a power user.

Brown is a firm believer in making computers available to everyone, and he continues to demonstrate his dedication to this philosophy.-Linda Joan Kaplan

HyperCard Courseware

Will college students of the future carry lightweight, portable

Macs complete with gigabytes of CD ROM HyperCard courseware? Could be, for there are



Dartmouth's HyperTeam is developing educational software using HyperCard, which "plays" text, graphics, and sound.

strong indications that higher education will play a key role in developing far-reaching instructional materials using HyperCard's "stackware."

Stackware holds this fascinating promise because it links information using numerous associations rather than presenting facts rigidly and serially, as textbooks do. And HyperCard's multimedia capabilities will certainly change the way instructors present their course materials to students. Using HyperCard, scholars will be able to customize information from their particular subject areas to accommodate many ways of interpreting and delivering information.

Academic stackware is already being developed through various HyperCard projects quietly seeded by Apple. Dartmouth University, for example, recently demonstrated some of the courseware developed by its "HyperTeam": a group of academicians representing different disciplines, dedicated to the practical application of Hyper-Card technology to create entirely new concepts in courseware. In collaboration with Apple, Dartmouth is also conducting a series of workshops for academic HyperCard users.

Then there is the Perseus Project-a collaboration among Harvard, Boston University, and other universities to build a multimedia database about classical Greek civilization. In addition, Stanford University's Shakespeare Project-a "Hypermedia" display combining the Mac, HyperCard software, and laserdisk technology-allows students to see the many elements that go into developing a play for the stage.

The results of much of this stackware development will be cataloged and distributed by organizations such as Kinko's Academic Courseware Exchange, following a full term of use in the classroom. The latest HyperCard courseware will appear in Kinko's spring catalog, which will be available on disk in HyperCard format. For more information, call Kinko's at 800/235-6919, in California 800/292-6640.-Valerie Kuletz

Breaking the \$4000 Barrier

many other programs.

It seems everybody wants an affordable laser printer with the PostScript page-description language that can be used with PageMaker, MacDraw, and

That's understandable, since a single 300-dpi printer can deliver high-quality text and images for a whole network of Macs. Although prices for Post-Script laser printers remain high, they are coming down.

For example, AST Research is now selling its TurboLaser/PS for \$3995-the lowest price for any PostScript printer. It prints 300 dpi at 8 pages per minute, contains 35 resident fonts, and has three ports: RS-232C serial, Centronics parallel, and

AppleTalk.

This compares favorably with Apple's LaserWriter Plus, which costs \$5799, and with the Laser-Writer, which lists at \$4999 but contains only 13 resident fonts. The TurboLaser does have two disadvantages when compared to the LaserWriters: it contains no manual-feed mechanism and doesn't print on 81/2- by 14-inch paper as the Laser-Writers do.

Instead, the TurboLaser contains 3MB of RAM, has a 250sheet paper capacity, and works with MS-DOS and DEC



AST Research offers this laser printer with many features.

computers. Its printer engine is a Ricoh, compared with the Canon engine used by Apple.

Other lower-cost laser printers that include PostScript compatibility are NEC's Silent-Writer LC 890 (\$4795); Qume's ScriptTEN printers (\$4795 and \$5295); The Laser Connection's PS let and PS let Plus (\$4995 and \$5495 respectively); QMS's PS 800 Plus and PS 800 II (\$5494 and \$6495); Texas In-

(continues)



"Can you believe it? Our team got picked for the hottest project of the year because they found out we do all our work on Sony diskettes."

he fast-moving, fastthinking people in today's competitive corporate world are the people pushing for the highest standards. For example, Sony diskettes.

People in the know, know that Sony's standards are the very highest. That, after all, is what made Sony a world leader in audio, video and computer magnetic storage media.

But selecting Sony also shows solid business sense because we invented the revolutionary format for the 3.5" drive and 3.5" floppy.

So we simply have much more experience than anyone else at making and perfecting 3.5" floppy disks.



Think of it this way: when your reputation's on the line and you've put your very best into your work, you want to be sure that your floppies are every bit as good as you are.

The way to do that is to make sure they're Sony.

Then you'll be in the very best of company.



Macworld News

strument's OmniLaser 2108 (\$5995); and DEC's ScriptPrinter (\$6295).

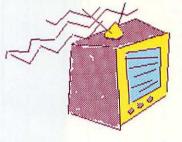
Buyers can also choose a non-Postscript printer like General Computer Corporation's new Personal LaserPrinter, which lists at \$2599.

For further information on the new AST TurboLaser printer call AST Research in Irvine, California, at 714/863-1333. For more information about the new Personal Laser-Printer call General Computer in Cambridge, Massachusetts, at 800/634-9737.

Videodisk Played by HyperCard

disk? A few years ago it briefly gained popularity and then became all but extinct after the VCR was introduced. But history may yet be kind to the videodisk. Hyper-Card can now "play" a videodisk like Isaac Stern plays the violin–very well.

Remember the video-



This *HyperCard* technology is being offered by Optical Data Corporation in the form of three \$39.95 *LaserCard* programs (earth science, life science, and physical science), plus five \$400 videodisks that work with them. Videodisk players used by *LaserCard* include Pioneer models LD-V4200 and LD-V6000, Hitachi 9500, Panasonic TQ2024F, and Sony 1500.

Here's how *LaserCard* works. Specially designed *Hy*-

perCard stacks contain cards that offer predetermined tours. Using some of the 108,000 discrete images contained on a videodisk, the tour might show the earth's weather, volcanoes, or geology. To begin a tour, just click on a HyperCard button that's labeled with a caption and icon. Suddenly you're watching a hurricane swirl across the Atlantic Ocean or the formation of a volcano over millions of years.

Your HyperCard-based program presents these effects on vour television. The program tells the videodisk player to select a series of single scenes or to play those scenes so fast that they create a movie. You get all this, and stereo sound, too. And with HyperCard's English-like scripting language, HyperTalk, you can even create your own video shows by giving commands to the videodisk player. For further information, call ODC in Florham Park, New Jersey, at 800/524-2481.

Give Me a Hand

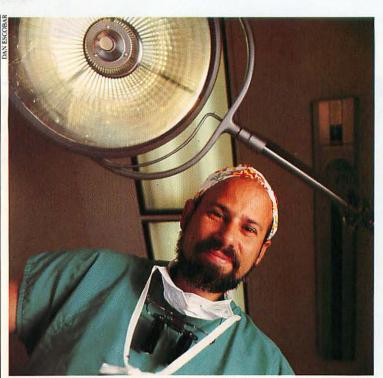


You're lying on an operating-room table while a physician re-

pairs your damaged hand. You can rest a little easier, because your surgeon has practiced this procedure many times—on a Macintosh—before actually performing surgery in an operating room.

This unique use of Macintosh graphics capabilities was devised by Robert Markison, M.D., assistant professor of surgery and cofounder of the Health Clinic for Performing Artists at the University of California, San Francisco, and chief of hand surgery at the UCSF-affiliated San Francisco General Hospital.

Markison uses the Macintosh as the basis for his hand-surgery curriculum. To teach students the surface anatomy of a hand,



Dr. Robert Markison's innovative use of the Macintosh for teaching band surgery has led one publisher to back his research.

he first shows the hand in its intact state, using scanned line drawings or digitized photographs of live hands, cadaver hands, and plaster casts or clay models.

Next his students view the deeper anatomical layers of the hand: muscles, nerves, blood vessels, tendons, and bones. For these structures, Markison uses digitized *MacVision* images from cadaver dissections and from hand-surgery cases in the operating room.

He then converts those images, with damage superimposed, to *Slide Show Magician* format. Using the mouse, the students can simulate the repair of an injured hand. At the same time, Markison's program asks medical questions and gives comments about medical decisions.

At a more advanced level, surgical residents view operating-room sequences, animated with *VideoWorks* and *Mac-Movies*, to perfect techniques such as the placement of sutures for tendon repair.

Markison also uses the Mac to determine how musical in-

struments should be customized for musicians with injured hands.

Markison plans to make his material available through Kinko's Academic Courseware Exchange and through the Apple University Consortium.

−Beverly Kane □

Your Best Stacks



Send a disk of your best HyperCard stacks to: News Editor, Mac-

world, 501 Second St., San Francisco, CA 94107. We'll pay \$25 for every entry selected for a monthly story called "Your Best Stacks." Please describe how you developed your stack, its features, who would use it, and how readers can obtain more information. We'll also need to know if it's free, shareware, or a commercial product.

QUICKEYS

■ The most important feature of ΩuicKeys™ is ease-of-use. Just select, point and you're done.

"QuicKeys is the sort of outstanding product that you recognize instantly as a Mac classic; an essential product for every Mac in your office"

-Bob Perez, Business Evangelist, Apple Computer, Inc.

It's a macro program for everyone.
So easy to use you'll want to use it
with everything! Assign keys for
repetitive tex, programs, commands,
desk accessories and more.
You are unlimited in what Quickeys
can do for your Mac... and your speed.

This is the program you've wanted for your Mac. An absolute MUST for hard drive users. Doubles your speed on the Mac, easily. "Quickeys made me forget my mouse." Steven Bobker, Editor-In-Chief, MacUser

Works with: 512E, Mac Plus, SE, Mac II, QuicKeys gives your new extended keyboard something to do. Works with standard keyboards, too. "QuicKeys brings new life to old and new keyboards" -Neil Shapiro, Editor-At-Large, MacUser, Chief Sysop; MAUG

How fast can you learn to use QuicKeys?
How fast did you read this sentence?
"Extended keyboards... they do
"Extended keyboards... they do
tunction keys. Hmm. Sure would
be nice to be able to assign
desk accessories to them."
Mac The Knife, MacWeek

The easiest, fastest way from one program to another on a Macintosh is with QuicKeys.
"QuicKeys offers the most clever, accessible way of assigning actions to command, option or function keys."
Bob LeVitus, Editor-In-Chief, MACazine

"Quickeys is the only reason for buying an extended keyboard." David Beidney, Editor At Large, Computer Graphic Magazine

Quickeys also works within programs. Assign command keys for operations like: Save, print, typeface selection and more.
Any commands you want can be assigned with Quickeys.
Just \$99.95.



- DiskTop™…it's like a portable Finder. Easy to install. Easy to use. You'll wonder how you ever got along without it. This "portable Finder" really finds!
- DiskTop contains the most powerful yet easy to use find command available on the Macintosh™ Hard drive users love it.

With DiskTop you can find, copy, move, rename, create folders, and more without ever leaving the document you're working in.



 "There is, in my opinion, no better file management desk accessory for the Macintosh" -MacWorld, August 1987

DiskTop saves time because you can do it...NOW!

4-1/2 Mouse rating-MacUser, August 1987

Just \$49.95.

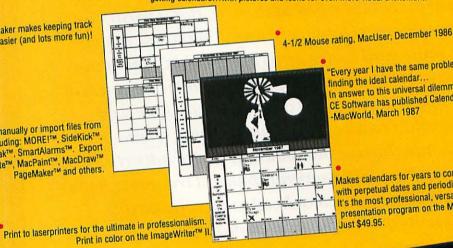
VERSION 3.0 Calendar Maker



Everybody ought to have CalendarMaker™. Make interesting, unique and attention getting calendars...with pictures and icons for even more visual excitement.

CalendarMaker makes keeping track of time easier (and lots more fun)!

Enter events manually or import files from programs including: MORE!™, SideKick™, BatteryPak™, SmartAlarms™. Export calendars to MacWrite™, MacPaint™, MacDraw™ PageMaker™ and others.



Every year I have the same problem: finding the ideal calendar. In answer to this universal dilemma,

CE Software has published CalendarMaker." MacWorld, March 1987

Makes calendars for years to come with perpetual dates and periodic events. It's the most professional, versatile calendar presentation program on the Macintosh.

CE SOFTWARE

Visit your retailer or call (800) 523-7638 for VISA or MasterCard orders. To purchase by mail send VISA or MasterCard number with expiration date, check or money order with appropriate amount plus \$2.00 shipping and handling for each product ordered to CE Software, 801-73rd Street, Des Moines, Iowa, 50312. For information call: (515) 224-1995.

What's Wrong with

by Jeff Chester

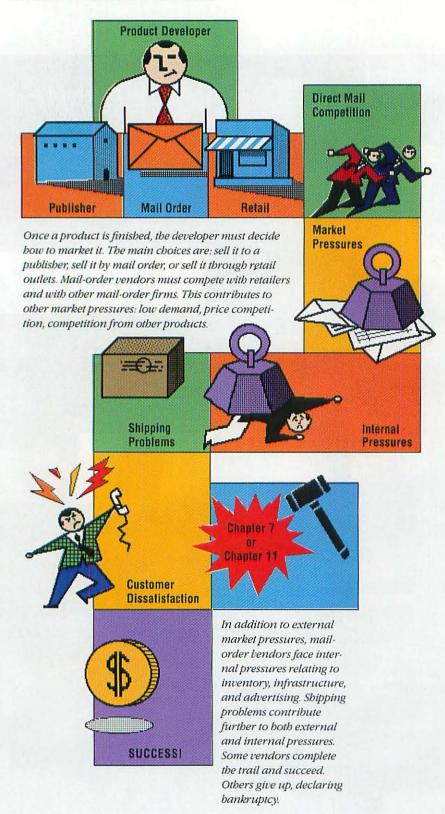


personal computer created a sharp demand for computer-related products, which mail-order businesses quickly stepped in to meet. But it wasn't long before thunderclaps were heard. While we realize that most mail-order firms are reliable companies run by professionals who sell computer products at discount prices, we're concerned with how well Macworld's readers are actually being served by mail order businesses, many of which advertise with us. Now, after several spates of troubling letters from readers, we felt obliged to investigate this turbulent—and important—industry.

Mail Order?



Mail Order Maze



A series of bankruptcies and scams in computer mail order over the last 18 months has stuck software and hardware developers with unpaid bills reaching into the tens of millions of dollars and has left thousands of would-be buyers with unfulfilled orders. Failing and sometimes bogus companies have sent consumers on a stomach-turning roller coaster ride, billing credit cards for products never sent, ignoring letters and phone calls. Many unfortunate customers will be lucky to get back even a few cents on the dollar.

Even more troubling is a new rash of "bust-out" schemes run by computer-savvy con artists who have entered the computer mail-order business. They set up hit-and-run companies that advertise, take orders, and then disappear. These crooks have discovered that the computer supply business provides a rich new territory for ripping off consumers.

At the heart of the problem is the increasingly controversial, but perfectly legal, practice of billing consumer credit cards at the time of order rather than when a product is actually shipped.

An Industry Careens Out of Control

Mail order is an attractive business, promising easy profits from minimal capital investment. Between 1980 and 1986 the number of companies selling computer products by mail quadrupled, with business accelerating at an average rate of 55 percent per year. According to Future Computing, \$1.1 billion in software was sold through the mail last year; the Dallas market research firm projects \$2 billion in hardware sales by the end of 1987. Double-digit growth is predicted at least until the early 1990s. Most people expect record years to follow-especially in the Macintosh market, because of new add-on products for the Mac II and the Mac SE. The boom is further aided by the nationwide trend toward armchair shopping. Macintosh owners are particularly attracted to mail order because the Mac's ease of operation means less dependency on retail store support.

But success has its curses as well as its rewards, judging from the comments of mail-order executives we contacted. Intense price competition brings in tens of millions of dollars but leaves some companies desperately strapped for cash. Unable to pay for products, they may lose credit with suppliers and be forced to operate on a cash-only basis, using the cash from new orders to pay for back-ordered items. When the inevitable delays occur, these companies may blame the back orders on suppliers. But the truth is that many mail-order firms have not installed adequate accounting procedures or systems. Sometimes they even invest their profits in disastrous hardware or software ventures; a sudden downturn in the market can plunge those ventures into an irreversible tailspin.

Such problems are further aggravated by the lack of experienced managers in this new industry. Maxwell Sroge, a nationally known expert in mail order, observes that this volatile business tends to attract people without the skills and experience necessary to run a successful operation—small-business owners "selling out of their apartments with the dream of hit-

ting the big time" who are often unable to cope with a complex business environment. Even the bigger companies sometimes suffer from bad management. This combination of low profit margins, bad management, and market instability has plagued many computer mail-order companies.

Troubling Trends

While most computer mail-order companies try to provide fast, reliable service, an increasing number of consumer complaints reveal troubling trends. The long list of problems ranges from irritating delays to downright fraud. Company ads may promise hundreds of products when warehouses are actually empty, and customers often face frustrating delays after placing their orders. Customers' credit cards may even be billed for goods whether or not the products are in stock, frequently forcing them to wait months for products already paid for. Worse, the company may declare bankruptcy in the meantime; customers faced with this situation often get back only a small portion of their outlay, if anything at all.

Even more disturbing, the computer mail-order industry is attracting a number of skilled fly-by-night con artists who set up an operation, advertise, accumulate cash, and then disappear without a trace. One of these, Compusystems, got off to a spectacular start after Los Angeles-based crooks created a dummy company, along with financial records that showed it to be worth \$6 million. Having fooled normally parsimonious credit managers, they scored tens of thousands of dollars before either consumers or publications discovered the hoax. When investigators got to the scene, all they found was an empty storefront.

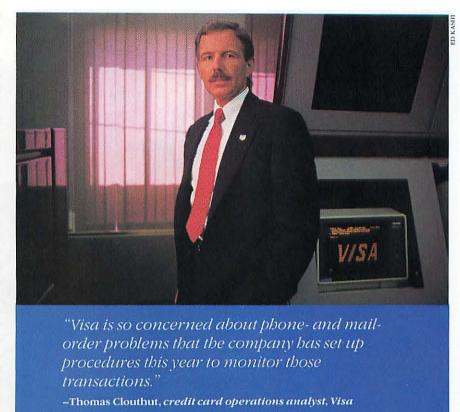
Developers Are Hurting Too

Product developers often feel caught in the middle. Heidi Roizen, president of T/Maker, is so frustrated by mail-order companies with long-overdue bills that she now requires full payment before shipping them products. Roizen cites one case in which a customer of Icon Review (Monterey, California) called her up to complain about T/Maker not producing enough software. The customer claimed to have been told that T/Maker couldn't deliver its products on time. But the truth, according to Roizen, was that the mail-order company had been switched to C.O.D. status and hadn't paid for anything.

Cynthia Garcia, sales manager of Thunderware, experienced similar feedback from customers about months-long delays in obtaining her company's products. "Northeastern Software would order from us three to four weeks after they received a customer order," she says. "So if we had a 10-day backlog, it meant a several-week delay for the customer. We finally had to stop selling to them."

15,000 Buyers Still Waiting

Fifteen thousand customers are still owed product or money by PC Network, the "membership-based" organization established in 1983 and now operating

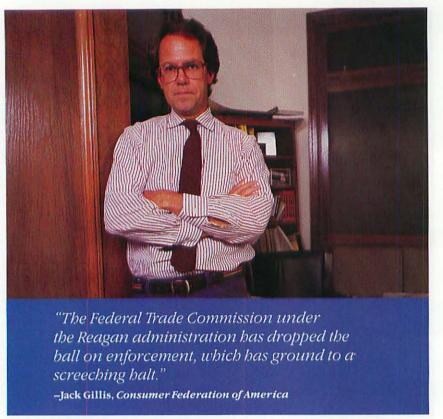


under Chapter 11 with assets of \$3.9 million. In return for the price of membership, which has ranged from \$8 to \$45, consumers are supposedly able to purchase products for 8 percent over dealer wholesale prices. The pitch was so successful that sales climbed to \$46 million for the fiscal year ending June 1986. The company even imported its own PC clone.

During its first two years in business, PC Network violated Federal Trade Commission (FTC) rules governing the timely delivery of products and refunds. In 1985 FTC officials began an investigation. A consent decree was signed in 1986, in which the company did not admit guilt but agreed to pay fines and make amends. Unfortunately for consumers, problems continued, and in May 1987 the beleaguered PC Network filed for Chapter 11. The company currently owes \$4.4 million in products to approximately 15,000 consumers and \$2.4 million to about 20 hardware and software vendors.

According to Alan Krause, a consumer protection specialist in the FTC's Chicago office, the PC Network case was a typical violation of the mail-order statutes. He points out that the company wasn't shipping within 30 days of receiving an order, nor was it informing its customers that purchased products could not be shipped. FTC regulations say that customers have the right to wait, agree to comparable merchandise, or receive a full refund under those circumstances.

PC Network's defense, Krause told *Macworld*, was that it wasn't aware of the FTC rule. According to Krause, the company advertised a guarantee of full refunds to customers who were dissatisfied either with



their memberships or with specific purchases. Yet consumers encountered delays of several months in receiving those refunds.

PC Network was fined \$30,000 by the FTC, to be paid in two installments, the second half due next March. Krause says that while the company did cooperate with FTC investigators "it was doomed to failure from the start" because he doubts whether PC Network's strategy of selling at 8 percent over wholesale ever really covered the company's operating costs.

Richard A. Koril, executive vice president of PC Network, says his company has straightened out its problems. He points out that the episode with the FTC relates to PC Network's first two years in business, and that the company knew nothing at the time about sending out delay notices. "We had tremendous growth and got behind in processing our paperwork," he explains. "Money moved through at a very high velocity. Every unanswered letter escalated into a major case-which could have been dismissed in fifteen minutes. You always have customers who want to return their products, vendors shipping the wrong product, and products with bugs." Koril added that although his company still owes consumers and trade creditors about \$6.5 million, the vast majority of the 15,000 customers left without product were able to get refunds from their credit card companies.

Fortunately, not everyone in the mail-order industry has a grim story to tell. Leading computer mailorder companies, such as MacConnection and Programs Plus, have set a good example for the industry. Both companies bill a customer's credit card only after the product is handed over to shippers.

"The worst thing you can do is have mail-order customers receive a credit card bill and not have received the product yet," says Joe Bonnazo, president of Programs Plus. "Our whole reason for starting MacConnection was to give users reliable service and good prices," says David Hall, that company's CEO. "Mail-order companies should also give consumers liberal warranty protection and efficient delivery."

So Who's Going to Protect the Consumer?

Unfortunately for consumers, the FTC's action against PC Network was a rare exercise in government regulation of the mail-order business. One reason for this, according to Ken McEldowney of San Francisco's Consumer Action, is that the FTC has shifted away from making rules that clean up an entire industry and now examines only individual companies. The FTC will only launch an investigation after receiving a tremendous number of customer complaints. And even then, the federal agency is seriously hampered in its efforts because of cuts in staff and budget in an era of deregulation. According to lack Gillis, an official with the Consumer Federation of America, the country's largest consumer organization, "The Federal Trade Commission under the Reagan Administration has dropped the ball on enforcement, which has ground to a screeching halt."

PC Network and Northeastern Software are just two examples of mail-order companies that have racked up big bills but are allowed to stay in business by the bankruptcy courts. James Ray Streinz, a Portland, Oregon, attorney who represented the creditors of Conroy-LaPointe (another computer mail-order company that was liquidated by a bankruptcy court), notes that while failing businesses receive protection under bankruptcy laws, consumers are often left virtually defenseless. Even with Chapter 11 protection, Conroy-LaPointe soon went out of business. "Sometimes these companies should be forced into liquidation so people don't lose money in the interim," Streinz observes.

Ever since 1872, when Congress enacted the mail fraud statute to combat a rash of swindles after the Civil War, the U.S. Postal Service has tried to crack down on con artists involved in mail-order fraud. At least six computer mail-order companies operating in the western United States are currently under investigation by the Postal Inspection Service. Neil Shorr, a postal inspector for the northeast region, reports that similiar investigations, aimed mostly at "bust-out" scams, are underway in his area. These involve companies that advertise, get your money, and then move on. But according to one postal inspector, the postal service has a difficult time convincing U.S. Attorneys to prosecute many of the cases that they've investigated. "The Los Angeles area is particularly known for such rip-offs," says the inspector. "But we've been told not to ask for any federal prosecution unless there's at least \$250,000 in losses."

Risky Business: A Case Study in Mail-Order Mayhem

Michael Mulvena crisscrosses Arizona selling students class rings, school T-shirts, and supplies. Last June—attracted by ads that talked of discounts of up to 60 percent—he ordered a disk drive, some software, a bottle of green ink, and one red and one green ribbon from Icon Review.

Mulvena's credit card was immediately billed \$259.05, and he recalls being told that "everything was in stock and they would ship immediately." Four days later, he received a big box containing the bottle of green ink and a red ribbon: \$8.00 worth of his order.

On calling the company, Mulvena discovered that he would have to wait five to six weeks. since everything else was backordered. He was told that a refund would take eight weeks, so he decided to wait. A letter of protest to the company president went unanswered. He began calling two or three times a week to find out about his order. "I needed that disk drive for my business. I even gave a different name, but the switchboard still wouldn't put me through to the president."

Finally, five weeks after he placed his order, Mulvena got a second shipment—a green ribbon. Furious, he kept on calling until, eight weeks after his order, he was able to convince a

disgruntled employee to take pity on him and issue a credit on his bank card. Mulvena eventually found a mail-order company that could deliver his disk drive immediately, but he's still bitter over the whole episode. "These people were playing the float by using my money," he says.

Icon Review, the Carmel, California, Mac mail-order and catalog company, puts through card charges immediately because "when your order enters the system...we can reserve your products at the prices quoted," says Dennis Moncrief, CEO of Icon. He maintains that his company's order processing software requires the practice.

Moncrief was unaware that two of Icon Review's competitors bill only after shipping, but noted that he plans to install software during the first quarter of 1988 that will enable his company to adopt that practice.

Despite Moncrief's pride in Icon Review (the only Macintosh-specific catalog), his stated attitude of consumer advocacy, the millions of dollars in sales, and his bullishness on the company's prospects, the company is experiencing serious cashflow problems. Moncrief says these are due to rapid growth and a "robust market where we've continually underestimated the response that we get

from our own promotions."

Queried about a growing number of customer complaints, he says, "Our ability to ship doesn't keep up with our intentions. We're continually plagued with bottlenecks and shortages relating to our rapid growth. Earnings are inadequate to allow inventory to grow at the same pace as sales."

One reason for Icon's cashflow problem may be its investment of about \$750,000 in a software venture (*MindWrite*) that did not bring in anticipated profits. Moncrief admitted that the cost of supporting a startup company from the profits of Icon, a start-up itself, were burdensome.

Last spring Moncrief took complete control of Icon, selling *MindWrite* at a modest sum to his brother-in-law, who developed the software. He also brought in new management and created additional information systems controls. While the CEO claims that Icon Review is profitable, he admits that it needs additional financing to survive.

Consumers, however, vote with their money, and it remains questionable whether they'll be willing to wait while Icon puts itself in proper running order.

Tales of Computer Woe

Conroy-LaPointe (Bellevue, Washington): Forced into liquidation last April. This company made millions of dollars for its husband-and-wife owners, with sales zooming from \$31 million to \$70 million between 1983 and 1985. An attorney familiar with the case says "they just kept losing money but didn't know it."

PC Network (Chicago): Bankrupt. Founded in 1983, this "discount buying club" claimed to have 125,000 members. In 1985 PC Network told industry analyst Maxwell Sroge that it was able to offer its customers greater discounts than the smaller companies, which are "ultimately forced under." Operating since April 1987 under Chapter 11, the company left more than 15.000 customers still waiting for goods that were paid for but never delivered.

First Software (Methuen, Massachusetts): Chapter 11 filed in 1986. Owed 89 creditors about \$9.6 million, including Borland Int'l (\$177,734), Brøderbund (\$417,188), and MicroPro (\$1,254,000). First Software distributed software and accessories to mail-order companies. First is back in business; MicroPro has already written off the loss.

Northeastern Software (Shelton, Connecticut): Bankrupt. One of the country's largest, this mail-order house filed for protection under Chapter 11 in October 1986 fleecing customers coast-tocoast and owing \$3.5 million to business creditors.

Compusystems (Torrance, California): Owners' whereabouts unknown. Known as a "bust-out," this bogus operation made a spectacular entrance to the mail-order scene last August. Its full-page ads offered products at rockbottom prices. The company fooled consumers and creditors alike, listing a fake number for bank credit references. At least 200 people sent hundreds of dollars worth of orders. The company never paid for the ads it placed, either.

Software-to-Go: Owners fled the country with attorneys general from three states in hot pursuit. The Dixons advertised as Micro Hotline, Programming International, Continental Micro, and Programming Innovations. Their ads in *The New York Times* offered a nonexistent software package; credit card firms lost hundreds of thousands of dollars when customers refused to pay. Bank of Boston lost \$161,000; a California bank lost \$176,000.

Tascom, Inc. (Vineland, New Jersey): Doing business as Scott Tasso Associates, this company was the target of a U.S. Postal Inspection Service investigation and signed a consent decree in January 1987. Tascom's ads in Yellow Pages throughout the country promised hefty discounts. "Customers sent in their checks and got nothing in return," says an inspector.

Federal and state regulations do offer some protection against companies that engage in outright fraud. However, even in these cases, government actions are inadequate, particularly since an increasing number of fraudulent operations have recently descended upon the computer mail-order scene.

One recent case so outraged lawmakers in California that they tightened their own state regulations governing mail order. Software-to-Go stung consumers nationwide, leaving attorneys-general in California, New Jersey, and New Hampshire in hot pursuit of the company's owners, James and Heather Dixon. Before they fled to Europe, the couple—whose other mailorder scams included Micro Hotline (Delaware), Programming Innovations (California), Continental Micro (Delaware), Optimal Software (California), and Programming International—advertised lavishly and sold software they knew they couldn't ship. They took out ads in major newspapers and promoted their own software package called *The Database Accelerator*—a product that never even existed.

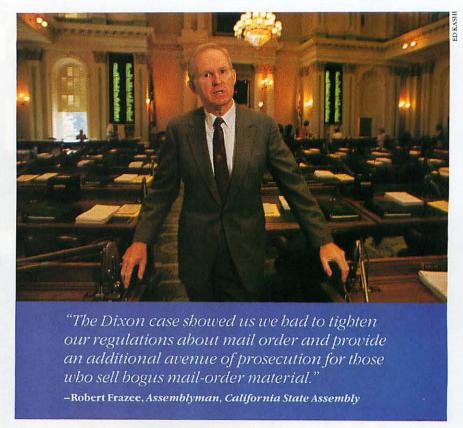
California lawmakers were wary about problems in the mail-order industry, but the case of the Disappearing Dixons "blew us out of the water. AB 3076 was passed to protect consumers from the sales of bogus software," says Assemblyman Robert Frazee (R-Carlsbad). "The Dixon case showed us we needed to not only tighten our own state regulations about mail order, but also to give the state Attorney General an additional avenue of prosecution for those who sell bogus mail-order material."

Will the Situation Improve?

In any new industry, one can expect a certain amount of poor management, bankruptcy, and even fraud, according to David Vogel, professor of business at the University of California, Berkeley, and editor of the respected *California Management Review*. He offers a strong warning to the fledgling computer mail-order industry. "The leading companies should develop some codes of conduct and take a dominant role in policing the industry. The whole mail-order industry rests on trust, and if it becomes common knowledge that consumers can't trust companies, the whole industry will dry up."

In the meantime, consumers need to take special care. Before ordering from mail-order companies, check on the quality of their service and avoid any with dubious reputations. People who use credit cards need to be aware of a little-known provision of the federal government's Fair Credit Billing Act that requires banks to remove unauthorized or unacceptable charges from customers' accounts (you need to make a written complaint within 60 days after receiving the bill).

Both Visa and Mastercard are now setting up procedures to catch companies that accrue an excessive amount of charge-backs from customers. "We just



started tracking mail- and phone-order transactions this year," says Thomas Clouthut, an analyst for Visa, which is running risk-management software to help its merchant banks flag problem areas or problem accounts.

Programs Plus's Joe Bonnazo maintains that industry and consumer magazines like *Macworld* have a role to play as well. "They should police this industry," he says, encouraging readers to write to publications with their complaints.

But increased self-regulation in the mail-order and banking industries still may not be enough. Existing agencies like the FTC and the Postal Inspection Service need support to provide consumers with adequate protection. A federal law prohibiting mail-order companies from billing your credit card prior to shipping merchandise is now needed, say consumer advocates. In the absence of new federal laws, states may be forced to require that mail-order companies deposit cash bonds as a way of protecting consumers from unscrupulous practices.

Ordering by mail can be an efficient and economical way to purchase computer supplies and equipment. And although most computer mail-order companies are honest and dependable, there is still much progress to be made if this topsy-turvy business is to grow into a mature, healthy, and reputable industry.

Looking through the Mac II Kaleidoscope

Comparing Mac II color monitors reveals some glaring differences in picture quality

by Bruce F. Webster

ho would have thought it? The Macintosh, the original "appliance" computer, is awash in an ever-increasing flood of hardware options. The Mac II, with its six slots and modularity, is the most inundated of all. Perhaps of greatest interest are color graphics displays. Color in computers is what everyone wants but nobody is really sure how to use.

Apple, of course, was first out of the gate with the Macintosh II Video Card, the High-Resolution Monochrome Monitor, and the AppleColor High-Resolution RGB Monitor. The Mac II Video Card occupies one of the six slots and presents a DB-15 connector in the back. The card itself supports a 640-by-480 display, with the 1:1 ratio and the "square pixels" we've all come to know and love in the earlier Macs. However, the standard Apple card supports a mere 4 bits of information per pixel. This allows for just 16 different gray shades or colors (depending on the type of monitor)-out of a possible 16 million. In other words, at any one time the screen can display only 16 different shades or colors, but you're allowed to say what those might be.

If 16 simultaneous colors aren't enough, you can buy the Macintosh II Video Card Expansion Kit for \$149. The kit consists of eight video RAM chips that plug into the eight empty sockets on the Mac II Video Card. Apple brochures state that

dealer installation is required for these chips. Horse hockey. All you have to do is line up the notches on the chips with the notches on the sockets and show a little caution and good sense when pushing them in. Warning: the chips do not seat all the way down, so don't force them. This kit expands the video card to 8 bits per pixel, which gives you 256 colors or grays on the screen simultaneously. If you're going to use a color monitor with this video card, do yourself a favor and buy the expansion kit.

The Apple High-Resolution Monochrome Monitor is a standard 12-inch high-resolution monochrome monitor. It's cheap, reliable, and has a crisp display. It also has been the standard monitor for the Mac II until recently, and it's terminally boring, so we'll move on to the next monitor.

The AppleColor High-Resolution RGB Monitor is built by Sony and uses Trinitron technology—the same technology that makes David Letterman look so clear and crisp on my TV set. This monitor has been nigh impossible to get ahold of during the past few months, so I was surprised when one arrived from Apple (I wasn't sure they even had any available). And surprise turned to delight when I plugged the



AppleColor monitor into the Mac II. The display is clear, sharp, crisp, steady, easy on the eyes—all those adjectives that folks who spend hours in front of screens like to hear. And the colors are brilliant and rich.

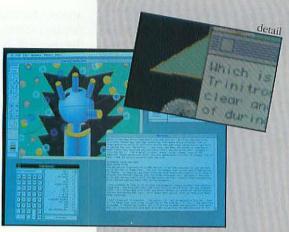
Alternate Color Monitors

The AppleColor High-Resolution RGB Monitor is not the only monitor you can hook up to the Mac II Video Card. You can, in theory, hook up any analog RGB monitor. In theory. In reality, you need a monitor with sufficient resolution to display clearly the 640-by-480 image that the video card puts out. Because of the high price and low availability of the AppleColor Monitor, several other manufacturers have started pushing their CRTs as replacements.

I had a chance to look at three such replacements, loaned by their manufacturers: the Sony CPD-1302, the Taxan Multivision 770 Plus, and the Thomson UltraScan 4375M. All three come with video and power cables. All three can switch between digital and analog RGB input, which means that you can also use them with Those Other Machines.

I won't keep you in suspense. The verdict is this: get an AppleColor monitor.

PHOTOGRAPHS BY FRED STIMSON



SuperMac Spectrum card with Sony GDM-1950



PCPC II video card with Sony GDM-1950

None of the three substitutes came even close in display quality. In fact, I was beginning to wonder if Apple had somehow set all this up to make the AppleColor look good. But no-these monitors were sent straight to me from the manufacturers at Macworld's request.

If you can't get the AppleColor monitor, you might look at the Thomson 4375M. It has the best display of the three non-Apple monitors: crisp, good colors and minimum distortion. It did require a fair amount of tweaking to get the display centered and correctly proportioned. Unlike the Taxan 770 Plus and Sonv CPD-1302 monitors we received, the Thomson Ultra-Scan had no tint bias. The lower price makes this an attractive alternative to the AppleColor monitor.

The Taxan Multivision 770 Plus was the second best of the three. The display had no ghosting (faint images appearing to one side of the true image), and it was crisp-though not as crisp as the AppleColor. There was no apparent interference from the Mac II. There was a slight reddish tint to the display, and I found no way to adjust it. This meant that "black" actually had a slight amount of color in it, which became apparent when brightness and contrast were turned up full. Also, under certain circumstances, a horizontal green line appeared in the bottom left corner of the screen. I had difficulty getting the display itself correctly proportioned (using the adjustment controls in the back). Despite all my fiddling, the sides of the display bowed inward. The Taxan is a

tolerable substitute for the AppleColor, but I still know which I'd prefer.

The Sony CPD-1302 came in last. This surprised me because I had previously used a CPD-1302 on a Mac II and had been pleased with it, for the most part. This monitor, however, was not satisfactory. It had a strong reddish tint, more pronounced than that of the Taxan. The CPD-1302 also had a problem with ghosting. For example, when I drew a vertical line, a fainter version of that line appeared a few millimeters to the right of it. And, like the CPD-1302 I had used before, this monitor was very susceptible to interference from the Mac II. With the CPD-1302 sitting on top of the Mac II, white streaks appeared on the screen every time the Mac II read from or wrote to the hard disk. Putting the monitor to the left side cleared the interference a little but caused a great deal of jumpiness in the display, making it tiring to look at. I also had to do a fair amount of adjusting to get the display set up. I was never really happy with it.

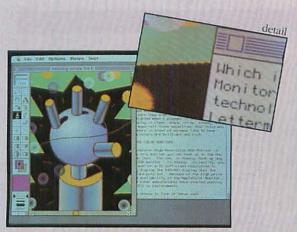
In contrast, the AppleColor Monitor gave an extremely clear, sharp display, with true blacks and reliable color representation. It's not quite as sharp as the Apple Monochrome Monitor, but the difference is negligible. No adjustments were needed, and there was no interference from the Mac II. I would have no problem spending long hours working at this display.



Apple High-Resolution Monochrome Monitor

Alternate Video Cards

The Mac II Video Card is nice, but it only supports a 640-by-480 display. The Mac II system software can support a much larger display, as well as multiple displays. So far, Apple has left it to other developers



AppleColor RGB High-Resolution Monitor



Thomson UltraScan 4375 M



Taxan Super Vision 770



Sony CPD-1302

to provide that additional support. Many monochrome displays have come out for the Mac II; now some color cards and displays are showing up.

Perhaps the best known is the Super-Mac Spectrum. This color graphics board for the Mac II does everything the Mac II Video Card does, and more. The Spectrum 1000/1 comes with enough RAM to drive a 1024-by-768 display with 2 colors. You can buy an upgrade kit to display 256 colors. In the Monitors section of the Mac's Control Panel, you select 2, 4, 16, or 256 colors. This flexibility is useful for those software packages (such as certain paint programs) that currently run with only a 1-bit-per-pixel display.

The Spectrum 1000/1 card lists for \$749. The upgrade kit sells for \$759. Super-Mac also offers three RGB monitors: a 16inch Sony Trinitron (\$2495); a 19-inch Sony Trinitron (\$3695); and a 19-inch non-Sony monitor (\$2995). So a 1024-by-768, 256-color system with a Sony 19-inch monitor costs \$5203.

A recent arrival on the scene is the PCPC II color graphics system, from Personal Computer Peripherals Corporation. This is an entire system, board plus monitor. The board has the same resolution as a fully loaded Spectrum: 1024 by 768, with 8 bits per pixel (256 colors). PCPC offers a choice of either a Mitsubishi or a Sony 19-inch RGB monitor. Suggested retail price for the complete system is \$4995. PCPC also sells the card alone for \$1595.

The PCPC II (with Sony monitor) has a slight edge over the SuperMac Spectrum (with Sony monitor) in terms of color quality; however, this judgment is highly subjective. The PCPC II Sony monitor was a clear winner over the PCPC II Mitsubishi monitor; the Mitsubishi display seemed washed out by comparison.

The Spectrum card is somewhat more flexible than the PCPC II, but the PCPC II is

less expensive when both systems are configured with a Sony 19-inch monitor. Given that base line, it's pretty much a draw between the two. However, if you can cope with a 16-inch monitor (instead of a 19-inch one), you can knock \$1200 off the price of a Spectrum system.

Multiple Video Cards

What happens if you plug more than one video card into a Mac II? You get a Mac II with multiple displays. The operating system defines a large virtual desktop, then lets you position each display within that desktop. You do this via the Monitors section in the Control Panel.

When you bring up the Monitors section, you see the displays (numbered 1 through whatever) in their current relative virtual positions. Using the standard click-and-drag technique, you slide the screens

A Video Primer

It annoys me to read articles where the author freely uses terminology that I don't understand. It annoys me even more when *I* do it. So here's a quick explanation of how video cards and monitors on the Mac II work.

The video display on the Macintosh (any Macintosh) is composed of pixels, a cute word that's derived from the phrase picture elements and refers to the little dots that make up the display itself. When a program writes text or draws images, it is just setting pixels to be certain colors—on a Mac, mostly black and white.

Pixels are represented inside the computer by bits in memory. In the closed Macs, each pixel is represented by 1 bit. Since the bit can have only one of two values-0 or 1-the pixel can have only one of two colors-white or black. However, most video cards for the Mac II represent each pixel with multiple bits, which increases the number of colors you can use. For example, if you have 4 bits per pixel, then you can have 16 colors; if you have 8 bits per pixel, you can have 256 colors.

There are two types of monitors: monochrome and RGB. A monochrome monitor displays just black and white. Sort of. It

can also (with the right video card) display shades of gray; that is, different tones ranging from black to white. Monochrome monitors are cheaper to build and easier to read, but they lack the sizzle of color.

An RGB (red-green-blue) monitor displays colors. The monitor shoots three electron "guns" at each dot (pixel) on the display. One gun determines how much red; the next, how much green; and the last, how much blue. Your eye and mind combine the three colors to form one. By varying for each pixel the amount of energy going to the red, green, and blue guns, you make the monitor display many different colors.

The question is, which colors? That's where the concept of a palette comes in. To the artist, a palette is a flat board on which are many different colors of paint; the artist mixes colors on the palette to form the desired hues. A video card's palette is defined by the range of values it can drive for the red, green, and blue guns of the RGB monitor. For example, if the video card can use 8 bits for the intensity value of red, green, and blue, then the total number it can generate is 28 × $2^8 \times 2^8 = 2^{24} = 16,777,216$ different colors.

But wait, there's more. Given that we have, say, 16 million colors to choose from but only 256 (or even 16) to display at one time, how do we decide which colors can be displayed? For that, we use a color look-up table (affectionately known as a CLUT). Suppose we have 4 bits per pixel. That means that we can display 16 colors, because each pixel can have a value from 0 to 15 (0000₂ to 1111₂). We set up a CLUT with 16 locations, numbered 0 through 15. Each location contains a 3-byte RGB value, which defines the color corresponding to that location. So, if a given pixel has the value 1011₂ (11₁₀), and location 11 in the CLUT contains the 3-byte RGB value corresponding to light blue, then that pixel will appear as light blue on the screen.

Note that there are two ways to change the color of a pixel. First, you can change the value (2 bits, 4 bits, 6 bits, whatever) associated with that pixel. That causes the video card to pick the corresponding value from the CLUT and send the RGB value to the monitor. Second, you can change the value in the CLUT itself. This changes the color displayed on the screen without modifying the pixel value.

Kaleidoscopes on Display

Monitors	Price	Diagonal Size	Dot Pitçh	Maximum Resolution	Vertical Scan Rate	Horizontal Scan Rate	Input
AppleColor RGB High-Resolution Monitor	\$999	13 in.	0.25mm	640 by 480	66.7 Hz	35 KHz	analog RGB
Taxan Multivision 770 Plus	\$895	13 in.	0.31mm	640 by 480	50 to 90 Hz	15 to 34 KHz	analog and TTL RGB
Thomson UltraScan 4375M	\$895	13 in.	0.31mm	800 by 560	45 to 75 Hz	15.6 to 35 KHz	analog and TTL RGB
Sony CPD-1302	\$945	13 in.	0.26mm	900 by 560	50 to 100 Hz	15 to 34 KHz	analog and TTL RGB
Sony GDM-1950	\$2995	19 in.	0.31mm	1024 by 768	60 Hz	48.8 KHz	analog RGB
Video Cards	Price	1	Resolútion	. Colors	s	Upgrade Price	Upgraded Colors
Macintosh II Video Card	\$499	(540 by 480	2 or 4		\$149	2, 4, 16, or 256
SuperMac Spectrum 1000/1	\$749		1024 by 768	2		\$759	2, 4, 16, or 256
PCPC II Video Card	\$1595		1024 by 768	256		none	n/a

around in a manner reminiscent of playing the old Puzzle desk accessory (and often equally frustrating). The screens are "sticky"—you can't drag them apart and position them in disjoint locations. The numbers correspond to where the cards are plugged into the NuBus slots, with number 1 being the card in the left-most slot, and so on to the right.

While you're laying things out, you can pick up and drag the menu bar from one display to another. This determines which screen will have the menu bar when you reboot, which is when all these changes go into effect. You can also set each screen for color or black and white, and with some cards (such as the Mac II Video Card and the Spectrum) you can select the number of colors. These last features go into effect immediately; you need not reboot to see the results.

With your system configured for multiple screens, you just pretend that you're working on one giant desktop, dragging items here and there. For example, as I type this on one 19-inch display, I have documents open on each of the other three displays. To move from document to document, I simply move the cursor around with the mouse. When the cursor reaches the side of one display, and there is an adja-

cent display, then the cursor moves onto the next screen.

What are the disadvantages of multiple displays? First, trying to keep track of the cursor. With one Mac II Video Card, one Spectrum, and two PCPC IIs, I've got 15 times the display area of a Mac Plus. And it's laid out in an irregular pattern. Getting from place to place can be a chore.

Second, arranging the monitors in a meaningful way. How do you set things up so that you can actually use all those screens? And where do you put them? These 19-inch monitors are tall, wide, and very deep; they weigh a lot and take up a great deal of space. On top of that, you can't place certain monitors too close to each other. For example, putting the AppleColor monitor too close to the Sony 19-inch monitor causes jittering and waving in the larger display.

Third, making use of the extra display area. How many windows, applications, and documents do you really need open at the same time? How many can you have open? There are certain limits to the number of open windows, as I discovered when laying out the Finder desktop.

Fourth, cost. The four displays I'm using right now have a combined list price of over \$16,000. That's in addition to the price of the Mac II itself, so you're looking at a \$20,000-plus system. But it's a nice \$20,000-plus system.

Conclusions

Do you really need a Macintosh II with four screens? Especially if three of those are 1024-by-768 displays, running on 19-inch RGB monitors? Probably not, though there are situations—such as simulation and modeling—where you might want multiple color displays. One large screen is probably sufficient, though having one large and one small display is very useful.

If I had to have just one display on the Mac II, it would be a fully loaded (768K) Spectrum card with a Sony 19-inch RGB monitor. That would give me a large work area (1024 by 768) and full color support (256 colors, configurable). Of course, said display would set me back about \$5200. Barring that, I'd get a fully loaded (307K) Mac II Video Card with an AppleColor RGB monitor. My ideal configuration would have both, with the small screen sitting on top of the Mac II and the large screen on the table to its right. □

See Where to Buy for product details.

Macintosh-Aided

Slowly but surely, the Mac is gaining ground in the engineering world



Pee-Wee Herman fans know these pint-size primeval playmates from Herman's offbeat TV show. Designer Joe Lewis drew the stop-action figures' aluminum skeletons in MGMStation—as well as the rear-projection system for specialeffects work on the facing page.

PHOTOGRAPHS BY MAX AGUILERA-HELLWEG

Design

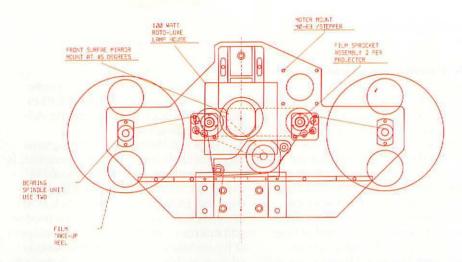
by Erfert Nielson

sk any engineer what is needed to make the Macintosh an ideal tool for computer-aided design, and you'll hear the same litany. It goes something like this: a larger screen, more memory, more processing speed, slots, and UNIX capability. If you think this sounds like a blueprint for the Mac II, you're right. The engineering community has eagerly awaited the arrival of the new machine. But not everyone has been content to wait. Although the fickle winds of Apple marketing have only recently begun to waft in the direction of engineering, the Mac has already found its way onto the desks of thousands of engineers, draftspersons, industrial designers, and machinists.

An informal survey of a few dozen engineers, software developers, and CAD experts shed some light on the present state of Macintosh-aided design. The consensus seems to be that although the current family of Macs is adequate for some applications in the multifaceted field of computer-aided design, the Mac is not yet a "serious" CAD tool. The Mac II, however, promises to challenge the low-end CAD workstations of companies like Sun Microsystems, DEC, and Apollo.

Integration and Interface

Why are engineers starting to choose Macs over dedicated CAD workstations? The traditional argument–price–carries less weight now; a Mac II with expanded memory, a color monitor, and a graphics card can easily cost nine or ten thousand dollars, not much less than an Apollo 3000 system. Shawn Hopwood, publisher/editor-in-chief of *The CAD/CAM Journal*, a



monthly magazine devoted to Macintosh CAD, sums up the answer in one word: integration. Says Hopwood, "On the Mac, you can do word processing, spreadsheets, and so on–all on one machine. I have yet to see anyone doing word processing on a Sun workstation. With *Switcher*, program integration is even more efficient. And with AppleTalk, you have connectivity."

Another plus is the Mac's standardized user interface and the ease with which programs can be learned. A short learning curve is a strong selling point for companies purchasing a CAD system. David Peltz, president of CADventures, a consulting firm specializing in computer graphics applications, drives the point home: "A draftsman can generally become fluent in a Mac CAD program in a week or so, compared to maybe two months on an IBM PC program with comparable features. For someone making \$30,000 a year, those two months of training will cost an employer \$5000."

Many Mac designers I spoke with are worried that programs from the IBM PC and other systems will simply be ported to the Mac, with no effort to conform to the Macintosh interface. The signs are, however, that developers are learning to appreciate the Mac standard. The distributors of EZ-Draft, which was originally ported directly from a VAX-based system, eventually came around and added a set of tool icons to the program. And Versacad has spent the last year completely recoding its Versa-CAD/Macintosh Edition, which the company had originally planned simply to port over from the PC.

Runs Good, Needs Software

A standard interface and program integration are among the Mac's strong points,

but there's an important piece missing. So far, the Mac lacks a wide selection of CAD software. Everyone interviewed agreed that Macintosh CAD software has some growing to do before it's adequate for engineers' needs. At present, Macintosh 2-D CAD software is confined to two major players: Bridgeport's EZ-Draft (also sold as Mac Designer by Case, the program's original developer) and Micro CAD/CAM's MGMStation. Diehl Graphsoft's MiniCad, a 2-D/3-D design program, is also in the running, but it seems to have been adopted primarily by architects rather than engineers. Although each has its partisans, no program has emerged as the perfect CAD package. (For a look at how these programs compare to each other-and to Autodesk's IBM PC-based AutoCAD-see "Benchmark: Mechanical CAD." Macworld. November 1987.)

While two-dimensional packages have been somewhat slow to arrive, a handful of three-dimensional modeling programs have been available for some time, including Enabling Technologies' *Pro3D*, Abvent's *SpaceEdit*, and Visual Information's *Dimensions*. In addition to 2-D and 3-D CAD packages, specialized engineering programs for structural analysis, printed-circuit-board layout, and computer-aided manufacturing are also available.

Additional 2-D CAD programs are finally appearing, however. Several programs have been announced in the past few months, and dozens more will arrive on the scene in the coming year. For a look at some of the new arrivals, see "CAD Expands."

File Transfer and Expandability

A healthy selection of CAD programs will help push the Mac toward Apple's goal of an engineering workstation, but other obstacles exist. For example, connectivity is another issue on the minds of Mac CAD experts. The Mac doesn't exist in a vacuum, especially in large firms, where it may work in conjunction with minicomputer- or mainframe-based CAD workstations. Also, like it or not, many companies have already invested a good deal of time and money in IBM PC-based CAD software, and many Mac users have expressed a desire to transfer graphics to and from AutoCAD and other PC programs. Finally, many engineers and designers would like to transfer graphics files between Macintosh programs, combining the capabilities of, for example, 2-D and 3-D packages. For a summary of current file-transfer options, see "How CAD Gets There from Here."

Even the new crop of Mac CAD programs won't satisfy everyone. Many engineers mentioned *AutoCAD* as an example of a good CAD package. What does *Auto-CAD* have that the Mac programs don't? First and foremost, *AutoCAD* has an extensive complement of add-on modules: because of its open-architecture software (and its installed base of 100,000), third-party developers offer hundreds of add-on applications for civil, mechanical, electri-

cal, structural, and chemical engineering—you name it. In addition, *AutoCAD* allows users to attach information such as a bill of materials to a drawing. Finally, *AutoCAD* offers programmability: users can write programs with the built-in AutoLISP language to add macros and otherwise customize the program.

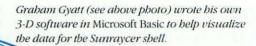
How can Macintosh CAD programs meet this challenge? The Mac's hardware is now expandable; its software should be, too. So far, solutions are somewhat piecemeal. For example, a program such as Affinity Microsystems' *Tempo* can be used to add macros to a CAD program. Developers of future Mac CAD software will have to take expandability into account as the competition grows.

Enough speculation. Let's look at how engineers and designers are putting the Mac to work in varied phases of the design process, in projects ranging from NASA's space station to animated dinosaurs.

Dinosaurs and Racing Cars

At AeroVironment, a small company in Monrovia, California, the Mac helped design an extraordinary flying machine: a radio-controlled pterodactyl with an 18-foot wingspan. AeroVironment specializes in unusual aircraft: the company's creations include two human-powered aircraft, the Gossamer Condor and the Gossamer Albatross, as well as the aforementioned pterodactyl. The Mac's contributions to the pterodactyl's design included spreadsheet calculations to help design a wing-flapping mechanism, a BASIC program that demonstrated the flapping with a 30-frames-persecond animation, and a pterodactyl flight simulator to help determine optimum steering strategies.

AeroVironment's latest project is equally unusual. The company is helping design the GM Sunraycer, a solar-powered race car that will participate this November in a 2000-mile race across Australia. The body of the Sunraycer is being designed by AeroVironment, the electric motor by General Motors, and the solar panels and batteries by Hughes Aircraft. According to AeroVironment's manager of the solar-powered car project, Alec Brooks, the Mac is involved in several facets of the project, from producing documentation to performing calculations in *Excel* and BASIC to communicating with a VAX that performs



higher-level calculations. In addition, full-



Engineers Graham Gyatt and Bart Hibbs (with beard) of Aero Vironment used the Mac to calculate the shape of the Sunraycer solar car and to plot full-scale plans.

sized plans for the car's body shell were produced in *MacDraw* and output on a Hewlett-Packard plotter via *MacPlots II*. During the race, a motor home housing a Mac SE will follow the car, collecting data with a telemetry link.

Oddly enough, AeroVironment isn't the only company using the Mac for dinosaur design. At the Hollywood-Tokyo Film Consortium, motion-control and special-effects designer Joe Lewis is working on, among other things, the Dinosaur Family of "Pee-Wee's Playhouse," a Saturdaymorning kiddie show with a somewhat surrealistic bent.

The Hollywood-Tokyo Film Consortium is neither in Hollywood nor in Tokyo, but in a warehouse in a Chatsworth, California, industrial park. The building houses a machine shop, a staff of model makers, and camera equipment used to film TV and movie animation sequences and special ef-

fects. Lewis uses his Mac to design the metal armatures inside the Dinosaur Family. He first makes a sketch by hand, then uses *MGMStation* to draw each segment of the aluminum "skeletons" that allow the latex dinosaurs to be moved for frame-by-frame animation. He plots the armature drawings on a Roland DG eight-pen plotter, then takes them to the Film Consortium's machine shop, where the parts are manufactured and assembled.

On the whole, Lewis is satisfied with *MGMStation*. "In the film business you have to be fast," he says, "and *MGMStation* lets me design components quickly." His wish list for *MGMStation* includes macros, an isometric view, and the ability to easily transfer graphics files to and from other programs.

Space Station Design

Now we leap from dinosaurs to spacecraft. At Martin Marietta's Denver aerospace facility, the Mac is taking part in the design of NASA's space station. Gerry Simonson, manager of technical and management information systems for the space station project, was recently involved in putting together a proposal for Work Package 1, one of four sections of the space station. Much of the word processing and graphics for the proposal were done on the Mac; the files were then transferred to a Sun workstation running *Interleaf* pagemakeup software to produce the final document.

Many of the technical drawings for the space station are produced on a VAX-based Intergraph 751 CAD workstation. Since Martin Marietta has to pay by the hour for Intergraph time, it's often more costeffective to create drawings on the Mac and then transfer them to the Intergraph. Similarly, if an Intergraph-produced drawing has to be modified, it can be transferred to the Mac, edited, and then returned to the Intergraph.

Inside the space station mockup at Johnson Space Center in Houston, Richard Hayner (left) and Chipp Walters examine the storage lockers they designed for NASA using MGMStation.



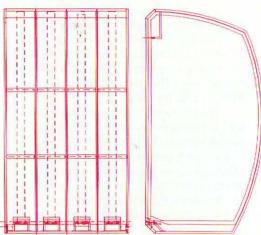
When faced with the problem of moving graphics files between the Mac and the Intergraph system, computer lab manager Allan Barsody first tried MGMStation's IGES translator. Then he came across Data Basics' Snap, which offers an optional Intergraph translator. Drawings are created in Snap on the Mac and sent to the Intergraph without the intermediate step of converting them to IGES format. "An added advantage of transferring Mac files to Intergraph is that you can then print the drawings on a Versatec electrostatic plotter," says Barsody. (Fortunately, such a roundabout printing method is unnecessary; Versatec recently released a Macintosh driver for its 7000 series electrostatic plotters.)

The Mac's involvement in the space station project isn't limited to proposal publishing. According to Simonson, engineers at Martin Marietta are using Macs for applications such as thermal and structural analysis of space station components. De-

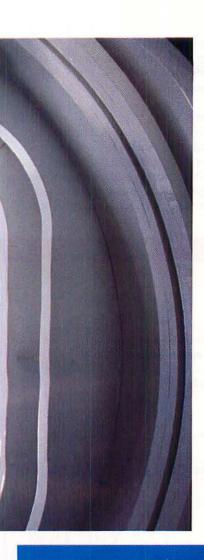
partmental staff engineer Bob McMordie uses *Excel* for number crunching in thermal analysis "what-if" calculations. "The thing that makes *Excel* appropriate for this type of problem is the ability to copy parts of equations along with cell locations. Engineers used to do this type of analysis with a slide rule; with *Excel*, you can change any constant or variable and see the results almost immediately."

Industrial Design

Martin Marietta isn't the only company that employs the Mac in space-station design. Design Edge, a Houston-based hightech industrial design firm, is using the Mac to design storage shelves for the space station. The firm's founders, Chipp Walters and Richard Haner, were committed to making the Mac an integral part of their company. Design Edge now has seven Macs, three of which are equipped with large monitors, as well as a LaserWriter and a Houston Instrument DMP 52MP pen plotter. "I decided we should be a Mac-based company," says Walters, "in part because of



Front and side elevations for a different locker concept from the one pictured above. This simplified assembly drawing is one of over 120 layouts created for this design.



the Mac's ability to integrate text and graphics." He points out that design is only one part of an engineer's job. "At Design Edge," explains Walters, "the research phase culminates in a document. We use a combination of *ReadySetGo*, a CAD program, a scanner, and the LaserWriter to prepare proposals."

After looking at the available CAD programs, Walters chose *MGMStation*. "I was up and running on *MGMStation* in a week, compared to about a month to get up to speed on *AutoCAD*," he says. In addition, Walters claims he can draft 100 to 150 percent faster with *MGMStation* than with *AutoCAD*. Richard Haner agrees with Walters's assessment of *MGMStation*: "I wouldn't consider going back to *Auto-CAD*—unless they put a Mac interface on it," he says.

Even though Design Edge's founders are sold on the Mac, it's a fact of life that the IBM PC is entrenched in the engineering world. In addition to Macs, Design Edge uses IBM PCs running programs such as AutoCAD, VersaCAD, and CADkey. To meet the needs of its working environment, Design Edge developed a program to transfer files between AutoCAD and MGMStation. For those who aren't inclined to write their own file-transfer program, Kandu Software's \$495 CADMover should do the trick.

Computer-aided design often involves more than simply drawing components and sending the plans to a machine shop. For a construction such as the space station racks, which must support a load as well as stand up to incredible g-forces during takeoff and landing, structural analysis is in order. Ronnie Haws, a Houston-based mechanical engineer, used Frame Mac from Erez Anzel Software to do preliminary stress analysis for the racks. Much of his work involves analysis for oil-industry machinery. "In the past," says Haws, "I did stress calculations by hand. A lot of the time, it was easier to add more metal than to do more calculations....but when you're working on an aircraft, keeping it lightweight is important." Walters presented Haws with several proposals for storage racks, and Haws analyzed the designs to make sure they were feasible. "Frame Mac showed that we had room to put a strong, lightweight structure in the space we had," says Haws. "It not only makes analysis easier and faster than by hand, but it also makes a nice presentation. Frame Mac output several drawings showing deflection and stresses. We presented them to NASA, and they were impressed."

Finished Products: CAM

Computer-aided manufacturing is often the final step in the CAD process. Not

CAD Expands

The announcement of *Versa-CAD/Macintosh Edition* has caused a stir in the Mac community. Many industry experts have remarked that the entry of an established company like Versacad lends credibility to the concept of Macintosh-based CAD. But *VersaCAD* isn't the only new CAD program on the scene; several more have recently been announced or released.

One new arrival is Data Basics' \$695 *Snap*, a two-dimensional CAD program modeled after Intergraph's mainframebased *Interactive Graphics Design Software*. *Snap* can be

used to transfer files to an Intergraph system or as a standalone design program. Another promising newcomer is Computer Shoppe's *PowerDraw*, announced at the August Macworld Expo. Built on a *MacDraw*-like interface and moderately priced (\$595 introductory), *PowerDraw* offers enough features to make it a contender in the professional CAD arena.

Another product to watch for is a Mac version of Microtek's *CADmate*, a \$995 raster-to-vector conversion program already available for the IBM PC. *CADmate* provides an alter-

native to redrawing designs that must be transferred from one CAD program to another; bit-mapped images produced by a scanner are converted into vector-based data that can be read by a number of CAD programs.

Rumors of Autodesk's entry into the Mac market abound, but at press time Autodesk was still denying that it had a Mac product in the works. Whether or not Autodesk jumps on the bandwagon, it looks like there will be no shortage of Mac CAD software.

every designer is as fortunate as dinosaur designer Joe Lewis, who has a machine shop a few doors down the hall. Many send their drawings to Mac-equipped machine shops that use computer numerical control (CNC) programs such as Bridgeport's Mac-EZ-CAM, Micro CAD/CAM's MGMStation CAM, or Gibbs and Associates' ncCAD/ncCAM to drive lathes, milling machines, punch presses, and other machine tools. Because a CNC program can be generated on the Mac from the CAD data, the step of

entering instructions at the machine tool's console is eliminated, thus freeing up the tool and increasing productivity.

At Rimo Manufacturing in Canoga Park, California, a Mac running MGM-Station CAM is connected to five machine tools. An A-B switch shifts operation from a tool's console to the Mac. Rimo's customers range from aerospace companies to Disney's EPCOT Center, but they have one thing in common: few of them produce drawings on the Mac. Therefore, a Rimo

draftsman converts the customers' blueprints into an *MGMStation* drawing, which is then converted into a CNC program by *MGMStation CAM*.

What's Next?

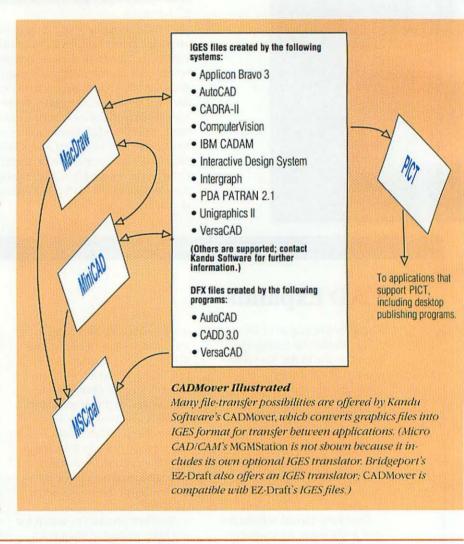
Where is Macintosh CAD headed in the coming year? *The CAD/CAM Journal's* Shawn Hopwood believes the development of CAD software can be divided into three stages. The first stage was reached some time ago with the introduction of

How CAD Gets There from Here

The recent boom in Mac CAD programs is heartening—unless you want to transfer drawings from one program to another. More programs means more file formats. And a good number of file formats already exist on the Mac and on other computers.

How do you transfer files? One solution is IGES. (IGES stands for International Graphics Exchange Standard or Initial Graphics Exchange Specification, depending on whom you talk to.) Bridgeport's EZ-Draft, Micro CAD/CAM's MGMStation, and Enabling Technologies' Pro3D offer IGES translators, which convert graphics files to ASCII or binary format, allowing them to be transferred among different programs and computers.

Many professionals are dissatisfied with IGES as a file-transfer medium, however. IGES files are larger than the original graphics files; in addition, information is sometimes lost in the translation. According to Allan Doane, project manager for Telos Software's VAXDraw IGES translator, IGES



programs like MacDraw and MacDraft, which are suitable for basic drawings but lack precise dimensioning and other features necessary for engineering applications. The Mac has now entered the second stage, with the arrival of enhanced programs suitable for architects and mechanical engineers. But yet to appear is the third generation of CAD software, which will allow nongraphics information (a bill of materials, for example) to be attached to a drawing. If Macintosh CAD packages are to

compete with the likes of VersaCAD and AutoCAD on the IBM PC, this stage is a logical next step.

How does Apple plan to support the Mac as an engineering workstation? It has already taken several steps in that direction (over and above a marketing campaign, that is). First, Apple's insistence that Versacad adopt the Mac's user interface is an indication that Apple intends to encourage developers to uphold the established userinterface guidelines.

is far from ideal as a file-transfer method. "IGES tries to be all things to all people," says Doane. "It would be more effective to come up with several specific formats [for transferring graphics files]. At best we can hope for a reasonable number of file formats."

But for now, IGES is one of the only options. VAXDraw can transfer MacDraw or MacDraft files to AutoCAD, which fills one part of the file-transfer bill.

A versatile program called CADMover, from Kandu Software, translates IGES files from mainframe-based CAD systems to several Macintosh file formats, and vice versa. CAD-Mover also translates files to and from various Macintosh CAD programs and AutoCAD's DXF format. (For a more comprehensive look at file-transfer options, see "CADMover Illustrated.")

A few forward-looking application developers are addressing the issue of file transfer. Visual Information's Dimensions accepts AutoCAD files,

which can be enhanced with Dimensions' 3-D modeling capabilities. Dimensions also transfers files to MacNeal-Schwendler's MSC/pal finiteelement-analysis program, providing stress-and-vibration analysis for structures designed with *Dimensions*. According to Ken Blakely, MacNeal-Schwendler's marketing manager for PC products, "Using a graphical preprocessor to build a model is a distinct improvement over the traditional method of input-a text file containing the geometry of a structure.

But Visual Information president Nick Pavlovic is not content to stop at Dimensions' current level of connectivity. "We've cut down on R & D in order to work with everybody we possibly can [on file compatibility]," he says. A link to VersaCAD/Macintosb Edition is being considered, for example. Combining those two applications would produce a long-awaited development: a sophisticated 2-D/3-D design environment.

Second, Apple has at last made a commitment to appear at CAD-related conferences and trade shows. This year, Apple was present at the June A/E/C Systems '87 Conference and Trade Show and the August SIGGRAPH computer graphics conference (Apple's SIGGRAPH display was located between the Sun and Apollo booths, appropriately enough). According to David Kulbarsh, manager of marketing for the Engineering and Scientific Marketing Group, Apple plans to attend eight to ten CAD- or engineering-related trade shows in the coming year, including Autofac and the National Design Engineering show.

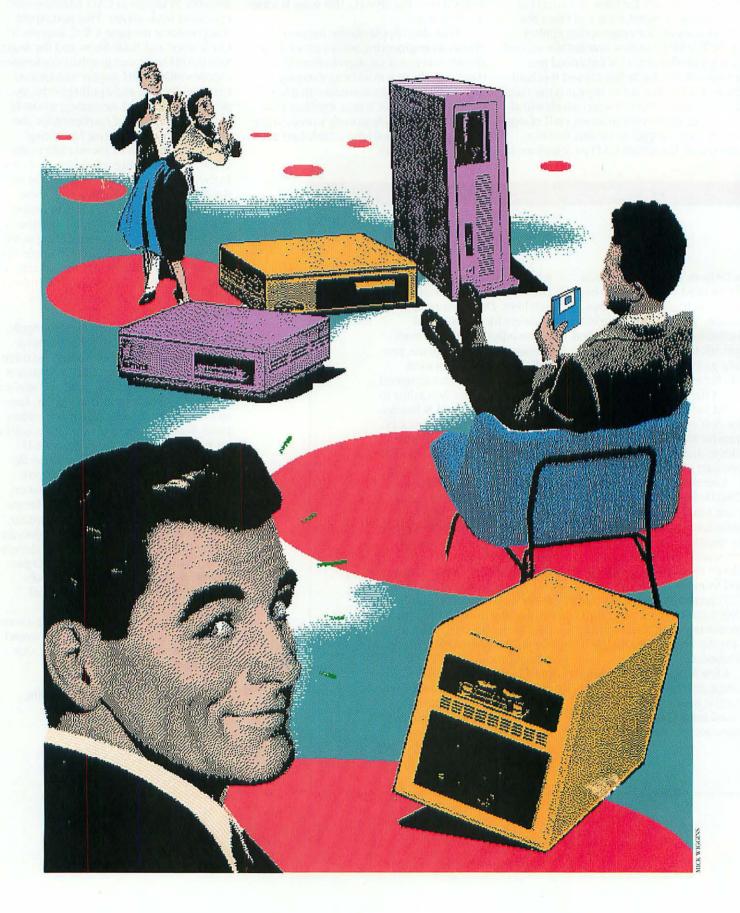
Third, Apple is beginning to realize that a new level of marketing expertise is needed to sell Macs as engineering workstations. According to Kulbarsh, Apple has recently hired several CAD consultants, as well as full-time marketing staff members with backgrounds in various areas of

engineering.

Engineering is a new field for Apple, and for many Macintosh software developers as well. In the near future, we'll see not only a proliferation of CAD programs but also a trend toward specialized applications, such as programs that analyze kinematics, the movements of a mechanism's parts. With the advent of graphics accelerator boards, real-time animation of 3-D models will be feasible. More output devices will be supported; at SIGGRAPH, Mac-produced drawings were output on Shinko and CalComp color thermal transfer printers, a JDL 200-dpi plotter/printer, film recorders from Dunn Instruments and Matrix Instruments, and a Versatec electrostatic plotter. As the number of CAD programs grows, more CAD-specific publications like The CAD/CAM Journal will appear.

The Mac, it seems, is no longer a computer for nebulous groups such as "knowledge workers" or "the rest of us"-it's for professionals, including engineers.

See Where to Buy for product details.



The Disk Shopper's Guide to Storage

Before you start shopping, get the facts on more than 200 hard disks for the Mac

by Prasad Kaipa and Bangs L. Tapscott

he hardest thing about a hard disk purchase isn't the disk; it's the decision: which one shall I get? If you're contemplating buying a hard disk, vou'll soon realize that the field offers an embarrassment of riches. In January 1987, Macworld compared over a hundred hard disks. Since then, a few have dropped by the wayside, many new entries have emerged, and others have been changed to accommodate the Mac SE and Macintosh II (see "Hard Disks Compared"). Currently there are nearly 250 hard disks to choose from, in various models, sizes, and styles, not counting those containing tape backups.

If you're like many Mac users buying your first hard disk, you'll need a guide to begin sorting out this mind-glazing array. Let's begin by dividing it into some manageable categories: type, size and speed, and features.

Three General Types

Freestanding

Most available hard disks are of the external type, designed to sit either under or beside the Macintosh (some of the industrial-strength models actually sit on the floor nearby). Nearly all freestanding models can be configured to run with any Mac that has a SCSI port: Mac Plus, SE, Mac II, or even a modified 512. If you need to carry your data and applications between a Mac

at home and one at work, one of the light-weight externals will fill the bill nicely. But if you intend to use your hard disk with different types of Macs, be sure to find out what reconfiguration is required or whether the drive will work at all with more than one type of Mac. Besides portability, a main virtue of almost all freestanding hard disks is immediacy. Just plug them in, start up the Mac, and they're ready to run.

Internal

Internal hard disks mount inside the Mac and have two main virtues: they use no desk space, and they make for one less piece of equipment to tote when transporting your Mac. Although a few internal hard disks are still built for the Mac Plus (by Micah, Mass Micro, Rodime, and Levco), most of the current ones are designed for the SE or the II. In normal installation on the SE, an internal hard disk replaces one of the two internal floppy drives. If you hate the thought of losing one of your floppies, some disk manufacturers offer a kit (case and cord) that will house your replaced floppy drive externally. Also, several companies produce an internal SE hard disk that mounts behind the floppy drives, leaving both intact. (Some of these hard disks can sit uncomfortably close to the CRT and intrude into space normally reserved for an internal card. If that concerns you, check with the manufacturer before buying.)

Unlike freestanding hard disks, the internal models require opening up the Mac for installation. Unless you are a technician or a fearless experimenter, be prepared for a trip to your local Macintosh mechanic to get your new drive up and running.

A unique hard disk for the Mac Plus, combining most of the virtues of internal and external drives, is Jasmine's BackPac. It attaches directly to the back of the Macintosh case, adding about an inch and a half to the depth of the machine; when latched down it forms an integral unit with the Mac. You can install this one yourself (it even comes with a special Torx wrench for removing two of the Mac's screws). There is no BackPac for the Mac SE because of the SE's fan vent and because it's easy to install an internal disk on the SE.

Removable-Media

Removable-media hard disk drives have a modus operandi familiar to every Mac user: when a disk gets full, you pull it out and insert an empty one. Strictly speaking, most removable-media drives aren't hard disks (only one manufacturer, Amcodyne, uses removable hard media) but their large storage capacity—10 or 20 megabytes per disk—and relatively fast access speed put them in the same ballpark as regular Winchester disks. Instead of a metal platter, the removable cartridge uses a

medium that looks very much like the stuff an ordinary floppy is made of. They come in two forms: Bernoulli cartridges and socalled big floppies.

There are numerous advantages to a removable-media hard disk drive. You never have to worry about filling it up, you can maintain tight data security (at the end of the day, pull the cartridge out and take it home with you), and different jobs can be stored on different cartridges. Additionally, they are relatively crashproof. Offsetting all this is the expense of the removable disks themselves; they are not cheap and tend to wear out after a certain number of uses.

Many hard disk users find that a removable-media drive provides a convenient way to back up large files that won't fit on a floppy-at a price that is easier on the pocketbook than a tape backup unit. Several manufacturers are now producing units that combine a hard disk and a removable-media disk in the same case.

Size and Speed

The Large and Small of It

When you're talking size, you're talking two kinds: inches and megabytes. The physical dimensions of an external hard disk can be important if you are concerned



SuperMac's DataFrame XP 60 drive, combining RLL encoding with a 28-ms access time, reflects the trend toward higher-capacity personal drives.



Racet's Administrator, available in 150MB or 300MB capacities, is one of the few drives available with a data cache.

about portability (Will it fit in my Mac carrving case?) or worktable clutter (Can I squeeze it between the modem and the air purifier?). But the primary concern for most hard disk buyers is this: how much data will it hold? Depending on how much you want to spend, hard disks are available in capacities ranging from 20 megabytes to over 2 gigabytes. You have no shortage of choices. Manufacturers are constantly finding ways to pack more data into less space, so drive cabinets don't always grow physically when disks increase their capacity.

Bigger Is Better

Don't be modest in estimating your needs when you set out to purchase a hard disk. Data and programs have a way of growing to fill all available space, and Fzot's law says: By the time you get your new hard disk home, it won't be big enough.

Not too long ago a 20MB hard disk was the largest drive you could get. Nowadays it's the low end of the product line. With programs getting bigger and bigger, you would be well advised to buy the largest hard disk your pocketbook will permit. Portability is not an issue here; there are many 30- and 40MB units no larger and no heavier than their 20MB counterparts. There are differences in speed; large disks tend to perform faster than small ones.

If you can't afford as large a hard disk as you would like now, take comfort in the fact that SCSI drives can be daisy-chained together via their SCSI ports. If you buy a

smaller one now, you can expand your storage capacity later with a second drive (see "Spinning Platters").

Speed

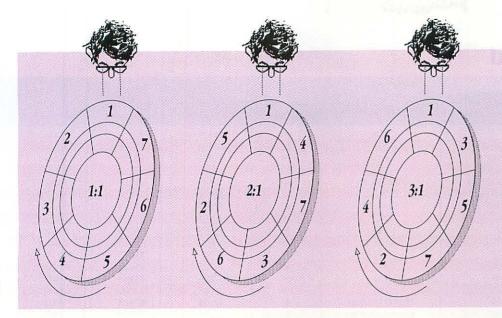
For most of us speed is a major factor when evaluating hard disks. It's also the most difficult criterion to define. The speed of a hard disk measures how quickly it responds to a call for data. Most hard disk specifications include average access time (AAT), given in milliseconds. AAT measures how long it takes, on the average, from the moment the computer asks for the data until the read-write head locates the track on which it is stored. Another speed rating factor is the extended data-transfer rate, which measures how quickly data is transferred over a fairly long period of time (AAT only tells you how long it takes to locate the information). The interleave ratio for a hard disk is yet another speed variable; it indicates how many disk sectors are skipped between consecutive reads or writes. The lower the ratio, the faster data is collected or written (depending on how well the ratio matches the speed of a particular computer).

All of the previous technical indicators are relevant to a disk's speed and performance, but many other factors can also affect the functional speed of a hard disk in operation. The technical indicators can serve as a tentative guide, but there is no simple numerical rating system that can capture all the things that determine the actual operating speed of a hard disk.

When files are scattered in little pieces all over the disk, a condition called fragmentation, the effective speed of the drive is greatly reduced. The more fragmented the disk is, the longer it takes to read the file. Fragmentation is a natural result of using a hard disk a lot, deleting old files and adding new ones. That's why hard disks tend to perform more slowly the more you use them. One solution to the fragmentation problem is to run Disk-Express, MacZap, or a similar utility program to reorganize your disk periodically.

A more cumbersome solution is to back up the entire hard disk onto floppies or tape, reformat the hard disk, and then recopy the files back onto it. The copying process regroups the files into contiguous

A second factor that can affect performance speed (this time to your advantage) is data caching, a feature built into some



The Interleave Factor

On a disk rotating in the direction shown (arrow), the order in which disk sectors are read varies with the interleave ratio. With 1:1 interleaving, each sector gets read in sequence. With 2:1 interleaving, every other sector is read. With 3:1 interleaving, every third sector is read. Mac II disks perform fastest with a 1:1 interleave ratio.

hard disks. Instead of reading a single sector and going in search of the next one, the drive reads an entire track and stores the unused data in a memory cache. If the next sector on its agenda lies on that same track, the disk retrieves it from the memory cache instead of looking for it on the disk, saving considerable time.

Features to Look For

Head Parking

A hard disk is a precision instrument. Like any delicate instrument it is subject to damage, and whenever it gets damaged you lose data. Look for features that minimize the likelihood of damage and maximize the ease of backing up data.



FWB Software's 155MB and 300MB Hammer drives utilize the 16.5-ms-access-time drives from Control Data Corporation, and are designed for reliability and long life.

The single most common type of hard disk damage is the head crash. This happens when the read-write head comes into contact with the platter. In normal operation, the head never actually touches the spinning disk. If it does touch it, the result is obliterated sectors and lost files. (Never jostle a hard disk while it's in operation.) Similar if less dramatic damage can happen when the disk is standing still.

Most hard drives have a way to position the head over a safe area of the disk when it's not in operation. This is called head parking. Some drives lock the head in the parked position. The safest ones park the heads automatically whenever power is turned off. A few go even further: if there is a power failure, the spinning motor becomes a generator, creating the needed electricity to park the heads.

Some drives park the heads when you select the Shut Down command from the Special menu in the Finder; others provide a special utility program that parks the heads. However, there's no guarantee that you'll remember to run the program. We don't advise buying a hard disk that lacks a head-parking facility—it's an accident waiting to happen.

The removable-media hard disk drives that are based on floppy-disk technology seem relatively immune to head crashes. Bernoulli-type drives are designed to let the disk flex away from the head in case of an imminent crash; in the big floppy-type drives the head actually rides on the surface of the disk. A head-parking facility is unnecessary, since you always remove the cartridge before transporting the drive.

Backing Up

Head crashes aren't the only way to lose data on a hard disk. Computers and disks are subject to occasional software crashes that can wipe out an entire hard disk, or trash important parts of it (the boot blocks or the volume directories, for instance). Once you've experienced a "fatal" disk crash, you will become a true believer in the importance of backing up your hard disk regularly.

An efficient and easy-to-use backup



NuData's GigaCell, available in capacities up to 1.2 gigabytes, can contain either a 40MB tape drive or the new 10MB floppy disk drive.

107

Hard Disks Compared

Manufacturer	Product	Туре	Capacity (megabytes)	List Price	Cost per Megabyte	Warranty
Amcodyne	PhD	HDR	80	\$5495	\$68.69	1 yr.
Apple Computer	Hard Disk 20-SC	HD	20	\$1299	\$64.95	3 mo.
Apple Computer	Hard Disk 40-SC	HD	40	\$1999	\$49.98	3 mo.
Apple Computer	Hard Disk 80-SC	HD	80	\$3199	\$39.99	3 mo.
Apple Computer	Internal 20-SC Hard Disk	HDI (SE, II)	20	\$999	\$49.95	3 mo.
Apple Computer	Internal 40-SC Hard Disk	HDI(II)	40	\$1599	\$39.98	3 mo.
Apple Computer	Internal 80-SC Hard Disk	HDI (II)	80	\$2699	\$33.74	3 mo.
AST Research	fAST-20	HD	20	\$1199	\$59.95	6 mo.
AST Research	AST-4000	HD	70	\$3699	\$52.84	6 mo.
AST Research	AST-4000	HD	140	\$5999	\$42.85	6 mo.
Bering Industries	Totem 1020F	HD	20	\$795	\$39.75	90 days
Bering Industries	Totem 1040F	HD	40	\$1795	\$44.88	90 days
Bering Industries	Totem 1080F	HD	80	\$2795	\$34.94	90 days
Bering Industries	Totem 10140F	HD	140	\$3895	\$27.82	90 days
Bering Industries	Totem 1220R	HDR (Dbl./20B)	40	\$2995	\$74.88	90 days
Bering Industries	Totem 1220C	Comb (20F/20B)	40	\$2295	\$57.38	90 days
Bering Industries	Totem 1240C	Comb (40F/20B)	60	\$2995	\$49.92	90 days
Bering Industries	Totem 1280C	Comb (60F/20B)	80	\$3995	\$49.94	90 days
Bering Industries	Totem II	HDR (B)	20	\$1195	\$59.75	90 days
CMS Enhancements	MacStack 20	HD HD	20	\$795	\$39.75	
CMS Enhancements	MacStack 40	HD	40	\$1495	STATE OF THE PERSON NAMED IN COLUMN NAMED IN C	1 yr.
CMS Enhancements	MacStack 43	HD	43	\$1295	\$37.38	1 yr.
CMS Enhancements	MacStack 80	HD	COLUMN TO SERVICE SERVICE SERVICES SERV	CONTRACTOR SERVICES	\$30.12	1 yr.
CMS Enhancements	COLOMBIA MORE AND SERVICE AND	CONTRACTOR AND ADMINISTRATION OF THE PROPERTY	80	\$1795	\$22.44	1 yr.
CMS Enhancements	Compact 20a	HD HD	20	\$795	\$39.75	1 yr.
	Compact 40	The State of the S	40	\$1395	\$34.88	1 yr.
CMS Enhancements	High Capacity Series 140	HD	140	\$3495	\$24.96	1 yr.
CMS Enhancements	High Capacity Series 240	HD	240	\$4695	\$19.56	1 yr.
CMS Enhancements	High Capacity Series 320	HD HD	320	\$6495	\$20.30	1 yr.
CMS Enhancements	Pro Series 40-SE	HDI (SE)	40	\$1295	\$32.38	1 yr.
CMS Enhancements	Pro Series 20-II	HDI (II)	20	\$695	\$34.75	1 yr.
CMS Enhancements	Pro Series 40-II	HDI (II)	40	\$1295	\$32.38	1 yr.
CMS Enhancements	Pro Series 43-II	HDI (II)	43	\$1195	\$27.79	1 yr.
CMS Enhancements	Pro Series 80-II	HDI (II)	80	\$1695	\$21.19	1 yr.
Cutting Edge	Cutting Edge 30	HD	30	\$679	\$22.63	6 mo.
Ehman Engineering	HD-20	HD	20	\$895	\$44.75	1 yr.
Ehman Engineering	HD-40	HD	40	\$1295	\$32,38	1 yr.
Everex	EMAC-20D	HD	20	\$995	\$49.75	1 yr.
Everex	EMAC-40D	HD	40	\$1295	\$32.38	1 yr.
Everex	EMAC-91D	HD	91	\$1695	\$18.63	1 yr.
Everex	EMAC FS 100	HD	261	\$10,000	\$38.31	1 yr.
Everex	EMAC 20ID	HDI (II)	20	\$895	\$44.75	1 yr.
Everex	EMAC 40ID	HDI (II)	40	\$1195	\$29.88	1 yr.
Everex	EMAC 91ID	HDI (II)	91	\$1595	\$17.53	1 yr.
FWB Software	Hammer 91	HDI (II)	91	\$2495	\$27.42	1 yr.
FWB Software	Hammer 155	HD	155	\$3495	\$22.55	1 yr.
FWB Software	Hammer 300	HD	300	\$4595	\$15.32	1 yr.
FWB Software	Hammer 91 + 10	Comb (91F/10BF)	101	\$3595	\$35.59	1 yr.
FWB Software	Hammer Disk10	HDR (BF)	10	\$1325	\$132.50	1 yr.
General Computer	HyperDrive FX-20	HD	21	\$1199	\$57.10	1 yr.
General Computer	HyperDrive FX-40	HD	40	\$1799	\$44.98	1 yr.
General Computer	HyperDrive FI-40	HDI (SE)	40	\$1599	\$39.98	1 yr.
General Computer	HyperDrive FI-40	HDI (II)	40	\$1399	\$34.98	1 yr.
Hard & Soft	Silver Server 103	HDI (II)	103	\$2995	\$29.08	1 yr.
Hard & Soft	Silver Server 145	HDI (II)	145	\$3495	\$24.10	1 yr.
IBNC	IBNC 20	HD	20	\$560	\$28.00	1 yr.
IBNC	IBNC 20	HD	20	\$560	\$28.00	1 yr.
IBNC	IBNC 40	HD	40	\$850	\$21.25	1 yr.
IBNC	IBNC 80	HD	80	\$1350	\$16.88	1 yr.
IBNC	IBNC 40 Internal	HDI (SE)	40	\$850	\$21.25	1 yr.
Iomega	Bernoulli Box 10	HDR (B) (Plus)	10	\$1299	\$129.90	90 days
Iomega	Bernoulli Box 10+10	HDR (B)	20	\$1999	\$99.95	90 days
Iomega	Bernoulli Box 20	HDR (B)	20	\$1799	\$89.95	90 days

Legend:
AP = automatic park
APL = automatic park and lock
B = Bernoulli cartridge
BF = big floppy

Comb. = combination drive Dbl. = double F = fixed HD = external hard disk

HDI = internal hard disk HDR = removable media Mod. = adapter module PD = public domain

Average Access Time		Backup			
(milliseconds)	Head Parking	Software	Spooler Software	Utility Software*	Other Goodies
25	AP on powerdown	yes	no	c,h,i	format as 4 vol. or 1
85	AP on powerdown	yes	no	a,b,i	
30	AP on powerdown	yes	no	a,b,i	
30	AP on powerdown	yes	no	a,b,i	
85	AP on powerdown	yes	no	a,b,i	
30	AP on powerdown	yes	no	a,b,i	
30	AP on powerdown	yes	no	a,b,i	
65	AP on powerdown	yes	yes	i,j	
28	AP on powerdown	yes	yes	i,j	POWER SHOW TO SHAW TO SHAW TO SHAW THE
28	AP on powerdown	yes	yes	ij	
65	AP on powerdown	costs extra	no	costs extra	
40	AP on powerdown	costs extra	no	costs extra	
30	AP on powerdown	costs extra	no	costs extra	
30	AP on powerdown	costs extra	no	costs extra	
37 65F/37B	n/a	costs extra	no	costs extra	
THE CALL PROPERTY OF THE PARTY	AP on powerdown	costs extra	no	costs extra	
40F/37B	AP on powerdown	costs extra	no	costs extra	
30F/37B	AP on powerdown n/a	costs extra	no	costs extra	
37 65	software		no	CONTRACTOR CONTRACTOR	
28	software	no no	no	d (Apple) d (Apple)	
28	software	no	no no	d (Apple)	
28	software	no	model and supplied	d (Apple)	
65	software	no	no no	d (Apple)	
29	AP on powerdown	no	no	Apple	rugged
18	software	no	no	d (Apple)	rugged
18	software	no	no	d (Apple)	
18	software	no	no	d (Apple)	
29	AP on powerdown	no	no	Apple	
65	software	no	no	d (Apple)	Market Control Control Control
29	AP on powerdown	no	no	Apple	
28	AP on powerdown	no	no	Apple	STANCE OF THE PROPERTY OF THE
28	AP on powerdown	no	no	Apple	
29	APL on powerdown	yes	no	i	y-cable for daisy-chaining
65	APL	yes	no	e,i	y-cable for daisy-chaining
26	APL	yes	no	e,i	y-cable for daisy-chaining
65	AP on powerdown	yes	yes	c,i	
28	AP on powerdown	yes	yes	c,i,j	
18	AP on powerdown	yes	yes	c,i,j	
23	AP on powerdown	yes	yes	c,i,j	
65	AP on powerdown	yes	yes	c,i,j	
28	AP on powerdown	yes	yes	c,i,j	
18	AP on powerdown	yes	yes	c,i,j	Al-
18	APL on powerdown	yes	no	e	hard disk util. included
16.5	APL on powerdown	yes	yes	e	hard disk util. included
16.5	APL on powerdown	yes	yes	e	hard disk util. included
16.5	APL on powerdown	yes	yes	e	hard disk util. included
65	n/a	yes	yes	e	hard disk util. included
65	software	yes	yes	c,d,f,h,i,j	
29	AP on powerdown	yes	yes	c,d,f,h,i,j	
29	AP on powerdown	yes	yes	c,d,f,h,i,j	
40	software	yes	yes	c,d,f,h,i,j	
28	APL on powerdown	yes	opt.	c,i,j (opt.)	
28	APL on powerdown	yes	opt.	c,i,j (opt.)	
65	software	Apple	no	d, i (Apple)	
65	software	Apple	no	d, i (Apple)	
29	AP on powerdown	Apple	no	i (Apple)	fast cache
26	AP on powerdown	Apple	no	i (Apple)	
29	AP on powerdown	Apple	no	i (Apple)	
35	n/a	yes	no	c,i	
38	n/a	yes	no	c,i	

f = security g = mount volume h = format i = backup j = spooling

*Utility Software: a = file search b = file recovery c = diagnostics d = park heads e = partitioning

Hard Disks Compared

Manufacturer	Product	Туре	Capacity (megabytes)	List Price	Cost per Megabyte	Warranty	
Iomega	Bernoulli Box 20 + 20	HDR(B)	40	\$2299	\$57.48	90 days	
Jasmine	Direct Drive 20	HD	20	\$649	\$32.45	1 yr.	
Jasmine	Direct Drive 80	HD	80	\$1399	\$17.49	1 yr.	
Jasmine	Direct Drive 40	HD	40	\$999	\$24.98	I yr.	
Jasmine	Direct Drive 50	HD	50	\$1159	\$23.18	1 yr.	
Jasmine	Direct Drive 160	HD	160	\$3499	\$21.87	l yr.	
Jasmine	MegaDrive	HDR (BF)	10	\$999	\$99.90	1 yr.	-
Jasmine	BackPac	HD	40	\$1299	\$32.48	1 yr.	100
Jasmine	InnerDrive 90/II	HDI (II)	90	\$1499	\$16.66	1 yr.	
LaCie	Cirrus 20	HD	20	\$549	\$27,45	1 yr.	
LaCie	Cirrus 30	HD	30	\$699	\$23.30	1 yr.	
LaCie	Cirrus 40	HD	40	\$ 799	\$19.98	1 yr.	
LaCie	Cirrus 60	HD	60	\$999	\$19.98	1 yr.	
LaCie	Cirrus 90	HDI (II)	90	\$1399	\$15.54	1 yr.	
LaCie	Slot Machine 20	HDI (SE)	20	\$449	\$22.45	1 yr.	
LaCie	Slot Machine 30	HDI (II)	30	\$599	\$19.97	1 yr.	
LaCie	Slot Machine 40	HDI (II)	40	\$699	\$17.48	1 yr.	
LaCie	Slot Machine 60	HDI (II)	60	\$899	\$14.98	1 yr.	
Levco	OverDrive 20	HDI (Plus)	20	\$1399	\$69.95	3 mo.	
Levco	OverDrive 40	HDI (Plus)	40	\$2699	\$67.48	3 mo.	4
LoDown LoDown	LoDown-20	HD	21	\$995	\$47.38	3 mo.	
LoDown	LoDown-30	HD	31	\$1295	\$41.77	3 mo.	
LoDown	LoDown-40 LoDown-60	HD	40 60	\$1995	\$49.88	3 mo.	1000
LoDown	LoDown-80	HD	A PRODUCED STATE OF S	\$2495	\$41.58	3 mo.	
LoDown	LoDown-155	HD HD	80	\$2495	\$31.19	3 mo.	-
LoDown	LoDown-234	HD	155	\$3995	\$25.77	3 mo.	
MacProducts USA	Magic 20 Internal	HDI (SE, II)	234	\$6595 \$449	\$28.18 \$22.45	3 mo.	
MacProducts USA	Magic 30 Internal	HDI (SE)	30	\$599	\$19.97	1 yr. 6 mo.	
MacProducts USA	Magic 20	HD (SE)	20	\$545	\$27.25	6 mo.	1691
MacProducts USA	Magic 30	HD	30	\$699	\$23.30	6 mo.	5238
MacProducts USA	Magic 40	HD	40	\$899	\$22.48	6 mo.	-
MacProducts USA	Magic 60	HD	60	\$1099	\$18.32	6 mo.	STA.
MacProducts USA	Magic 65	HD	65	\$995	\$15.31	6 mo.	350
MacProducts USA	Magic 91	HD	91	\$1595	\$17.53	6 mo.	
MacProducts USA	Magic 155	HD	155	\$1899	\$12.25	6 mo.	100
MacProducts USA	Magic 300	HD	300	\$2595	\$8.65	6 mo.	100
MacProducts USA	Magic 750	HD	750	\$50,000	\$66.67	l yr.	
MacProducts USA	Magic 2300	HD	2300	\$70,000	\$30.43	1 yr.	
Mass Micro Systems	Mass 20	HD	20	\$589	\$29.45	l yr.	
Mass Micro Systems	Mass 40	HD	40	\$899	\$22.48	1 yr.	-
Mass Micro Systems	Mass 65	HD	65	\$1199	\$18.45	1 vr.	
Mass Micro Systems	Mass 65i2	HDI (SE)	65	\$1599	\$24.60	1 yr.	1920
Mass Micro Systems	Mass 65i2	HDI (SE)	65	\$1599	\$24.60	1 yr.	287
Micah	AT 20	HDI (512K, 512KE, Plus)	20	\$1295	\$64.75	2 yr.	
Micah	AT 30	HDI	30	\$839	\$31.00	2 yr.	391
Micah	AT 40	HDI	40	\$899	\$53.17	2 yr.	
Micah	AT 60	HDI	60	\$1159	\$42.11	2 yr.	9
Micah	AT 100	HDI (II)	100	\$1549	\$27.92	2 yr.	
Micah	AT 150	HDI (II)	150	\$1999	\$22.48	2 yr.	5//
Micah	AT 220	HDI (II)	220	\$3599	\$19.32	2 yr.	
Micah	AT 310	HDI (II)	310	\$4999	\$15.49	2 yr.	
Micah	AT 45	·HDI	45	\$1395	\$13.33	2 yr.	
Micah	XT 20	HD	20	\$649	\$16.36	2 yr.	
Micah	XT 30	HD	30	\$1595	\$16.13	2 yr.	
Micah Micah	XT 40	HD	40	\$999	\$28.30	5 yr.	
Micah	XT 45	HD	45	\$1895	\$32.45	2 yr.	
Micah	XT 60	HD	60	\$1199	\$24.20	5 yr.	
Micah Micah	XT 100	HD	100	\$1699 \$3300	\$24.98	2 yr.	-
Micah Micah	XT 150 XT 220	HD	150	\$2399	\$19.98	2 yr.	
Micari	X1 220	HD	220	\$3899	\$16.99	2 yr.	

Legend:

AP = automatic park
APL = automatic park and lock
B = Bernoulli cartridge
BF = big floppy

Comb. = combination drive Dbl. = double F = fixed HD = external hard disk

HDI = internal hard disk HDR = removable media Mod. = adapter module PD = public domain

Average Access Time		Backup	5 - 1 - 5 - 5 - 5	TANNAM C. C.	Other Co., II
(milliseconds)	Head Parking	Software	Spooler Software	Utility Software*	Other Goodles
38	n/a	yes	no	c,i	
65	software	yes	yes	g,d,i,j	9MB PD software
26	AP on powerdown	yes	yes	g,d,i,j	9MB PD software
40	AP on powerdown	yes	yes	g,d,i,j	9MB PD software
26	AP on powerdown	yes	yes	g,d,i,j	9MB PD software
26	AP on powerdown	yes	yes	g,d,i,j	9MB PD software
65-70	AP on powerdown	yes	yes	g,d,i,j	9MB PD software
29	AP on powerdown	yes	yes	g,d,i,j	9MB PD software
16	APL on powerdown	yes	yes	g,d,i,j	9MB PD software
68	AP on shutdown	yes	no	e,f,i	dynamic resizing
65	AP on shutdown	yes	no	e,f,i	
65	AP on shutdown	yes	no	e,f,i	
30	AP on shutdown	yes	no	e,f,i	
18	AP on shutdown	yes	no	e,f,i	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
68	AP on shutdown	yes	no	e,f,i	keep both internal floppies
65	AP on shutdown	yes	no	e,f,i	
65	AP on shutdown	yes	no	e,f,i	
30	AP on shutdown	yes	no	e,f,i	
85	AP on powerdown	no	no	a,e,g,h	
29	AP on powerdown	no	no	a,e,g,h	DD aufteriore
65	AP on shutdown	opt	no	c,g,h,i (opt.)	PD software
65	AP on shutdown	opt	no	c,g,h,i (opt.)	PD software
29	AP on shutdown	opt	no	c,g,h,i (opt.)	PD software
29	AP on shutdown	opt	no	c,g,h,i (opt.)	PD software
29	AP on shutdown	opt	no	c,g,h,i (opt.)	PD software
16.8	AP on shutdown	opt	no	c,g,h,i (opt.)	PD software
18	AP on shutdown	opt	no	c,g,h,i (opt.)	PD software
65	software	yes	no	i	. 1 1 1/2 2 1
30	software	yes	no	i	includes MacZap pkg.
65	software	yes	no	4	
65	software	yes	no	i	includes MacZap pkg.
28	software	yes	no	i	includes MacZap pkg.
28	software	yes	no	1	includes MacZap pkg.
30	AP on powerdown	yes	no	i i	voice-coil drive, includes MacZap pkg
20	software	yes	no	i	includes MacZap pkg.
18.5	software	yes	no	i	includes MacZap pkg.
18.5	software	yes	no	i	includes MacZap pkg.
16.5	AP on powerdown	yes	no		includes MacZap pkg.
16.5	AP on powerdown	yes	no	i	includes MacZap pkg.
45	software	no	no	d	8MB of PD software
45	software	no	no	d	8MB of PD software
45	software	no	no	d	8MB of PD software
26	software	no	no	d	keep both internal floppies
26	software	no	no	d	
45	AP on powerdown	yes	no	i	
40	AP on powerdown	yes	no		keep both internal floppies
40	AP on powerdown	yes	no	i	ORONA SANDONIO DI PROPRIO DI ROSSO DI LINICI DI CONTROLLO
40	AP on powerdown	yes	no	1	
35	AP on powerdown	yes	no	e,f,i	
28	AP on powerdown	yes	no	e,f.i	
28	AP on powerdown	yes	no	e,f,i	WHITE AND TO THE PROPERTY OF T
26	.AP on powerdown	yes	no	e,f,i	
26	AP on powerdown	yes	no	e,f,i	WWW.
16.5	AP on powerdown	yes	no	e,f,i	
16.5	AP on powerdown	yes	no	e,f,i	
65	APL on powerdown Apple	no	Apple		
35	AP on powerdown	yes	no	e,f,i	
65	APL on powerdown Apple	no	Apple		
28	AP on powerdown	yes	no	e,f,i	
28	AP on powerdown	yes	no	e,f,i	
26	AP on powerdown	yes	no	e,f,i	
26	AP on powerdown	yes	no	e,f,i	

f = security g = mount volume h = format i = backup j = spooling

*Utility Software: a = file search b = file recovery c = diagnostics d = park heads e = partitioning

Hard Disks Compared

Manufacturer	Product	Type	Capacity (megabytes)	List Price	Cost per Megabyte	Warranty
MicroTech International	microMAC 30	HDI (SE)	30	\$849	\$17.72	The state of the s
MicroTech International	microMAC 45	HDI (SE)	45	\$1089	\$17.74	2 yr. 2 yr.
MicroTech International	Nova 20	HD HD	22.9	\$789	\$34.45	5 yr.
dicroTech International	Nova 30	HD	30	\$929	\$30.97	5 yr.
AicroTech International	Nova 50	HD	50	\$1349	\$26.98	5 yr.
Mirror Technologies	MagNet 30X	HD	31	\$1295	\$41.77	1 yr.
Mirror Technologies	MagNet 40X	HD	40	\$1795	\$44.88	1 yr.
Airror Technologies	MagNet 85X	HD	85	\$4595	\$54.06	1 yr.
Mirror Technologies	300 SE	HDI (SE)	30	\$1095	\$36.50	1 yr.
Mirror Technologies	450 SE	HDI (SE)	45	\$1295	\$28.78	1 yr.
dirror Technologies	50 II	HDI (II)	50	\$1599	\$31.98	1 yr.
dirror Technologies	80 H	HDI (II)	80	\$2699	\$33.74	1 yr.
Northern Telecom	Memory Bank 261	HD	261	\$11500	\$44.06	2 yr.
Northern Telecom	Memory Bank 485	HD	485	\$15900	\$32.78	2 yr.
NuData	Data Cell 20	HD	20	\$1095	\$54.75	1 yr.
NuData	Data Cell 40	HD	40	\$1695	\$42.38	1 yr.
NuData	Data Cell 90	HD	90	\$2350	\$26.11	1 yr.
\uData	Data Cell 150	HD	150	\$3395	\$22.63	1 yr.
luData	Data Cell 220	HD	220	\$5295	\$24.07	1 yr.
NuData	Data Cell 10R	HDR (BF)	10	\$1385	\$138,50	1 yr.
NuData	Data Cell 10R X 10R	HDR (Dbl/10BF)	20	\$2685	\$134.25	1 yr.
NuDatá	Data Cell 40 X 10R	Comb. (40F/10BF)	50	\$2800	\$56.00	I yr.
NuData	Data Cell 90 X 10R	Comb. (90F/10BF)	100	\$3415	\$34.15	1 yr.
NuData	Giga Cell 290	HD	290	\$8550	\$29.48	l yr.
NuData	Giga Cell 440	HD	440	\$13,050	\$29.66	1 yr.
NuData	Giga Cell 580	HD	580	\$15,600	\$26.90	1 yr.
Palo Alto MicroSystems	WhisperDrive 32	HD	32	\$750	\$23.44	90 days
Palo Alto MicroSystems	WhisperDrive I-32 SE	HDI (SE)	32	\$750	\$23.44	90 days
Peak Systems	Plus-20	HD	21	\$895	\$42.62	1 yr.
Peak Systems	Plus-30	HD	31	\$1095	\$35.32	1 yr.
Peak Systems	Plus-50	HD	45 65	\$1695	\$37.67	1 yr.
Peak Systems	Plus-80	HD		\$2195	\$33.77	1 yr.
Peripheral Land	PL 30 Turbo	HD HD	32 50	\$1195 \$1495	\$37.34 \$29.90	1 yr.
Peripheral Land	PL 50 Turbo PL 100 Turbo	HD	100	\$2495	\$24.95	1 yr.
Peripheral Land	PL 170 Idribo	HD	172	\$4995	\$29.04	l yr.
Peripheral Land	PL30i	HDI (SE)	30	\$995	\$33.17	1 yr.
Peripheral Land Peripheral Land	PL50i	HDI (SE, II)	50	\$1295	\$25.90	1 yr.
Peripheral Land	PL65i	HDI (SE, II)	65	\$1450	\$22.31	1 yr.
Peripheral Land	PL 30	HD HD	30	\$995	\$33.17	Tyr.
Peripheral Land	Infinity II	HDR (BF)	10	\$1095	\$109.50	1 yr.
Peripheral Land	Infinity	HDR (BF)	10	\$1295	\$129.50	1 yr
PCPC	MacBottom HD21	HD	21	\$1195	\$56.90	2 yr.
PCPC	MacBottom HD32	HD	32	\$1395	\$43.59	2 yr.
PCPC	MacBottom HD45	HD	45	\$1795	\$39.89	2 yr.
PCPC	MacBottom 20	HD	20	\$1195	\$59.75	2 yr.
PCPC	PCPC I HD144	HDI (II)	144	\$3295	\$22.88	1 yr.
PCPC	PCPC HD20 WSI	Mod	n/a	\$299	n/a	2 yr.
Priam Systems Division	MacDisk 40	HD	38.5	\$1195	\$31.04	1 yr.
Priam Systems Division	MacDisk 65	HD	65	\$1595	\$24.54	1 yr.
Priam Systems Division	MacDisk 100	HD	100	\$1995	\$19.95	1 yr.
Priam Systems Division	MacDisk 230	HD	230	\$3995	\$17.37	Lyr
Primary Data	Pro 20	HD	20	\$695	\$34.75	1 yr.
Primary Data	Pro 40	HD	40	\$895	\$22.38	1 yr.
Primary Data	Pro 50	HD	50	\$1195	\$23.90	1 yr.
Primary Data	Pro 80	HD	80	\$1395	\$17.44	1 yr.
Primary Data	Pro 160	HD	160	\$2495	\$15.59	l yr.
Primary Data	Pro 80DC	HD	80	\$1495	\$18.69	1 yr.
ProApp	ProApp 20S	HD	21	\$995	\$47.38	1 yr.
ProApp	ProApp 40S	HD	40	\$1395	\$34.88	1 yr.
ProApp	ProApp 40SEI	HDI (SE)	40	\$1295	\$32.38	1 yr.
ProApp	ProApp 90SI	HDI (II)	89	\$2799	\$31.45	1 yr.

AP = automatic park APL = automatic park and lock B = Bernoulli cartridge BF = big floppy

 $\begin{array}{ll} \text{Comb.} = \text{combination drive} \\ \text{Dbl.} = \text{double} \\ \text{F} = \text{fixed} \end{array}$

HD = external hard disk

HDI = internal hard disk HDR = removable media Mod. = adapter module PD = public domain

	Average Access Time		Backup			
	(milliseconds)	Head Parking	Software	Spooler Software	Utility Software*	Other Goodles
	16.5	AP on powerdown	yes	no	e,f,i	
	16.5	AP on powerdown	yes	no	e,f,i	
	85	AP on shutdown	Apple	no	Apple	
	85	AP on shutdown	Apple	no	Apple	
	85	AP on shutdown	Apple	no	Apple	
	65	AP on powerdown	no	no		
5	28	AP on powerdown	no	no		
è	33	AP on powerdown	no	no		
	65	AP on powerdown	no	no		
	28 28	AP on powerdown AP on powerdown	no no	no no		
	28	AP on powerdown	no	no		
	23	APL on powerdown/power loss	ves	no	i	sturdy
	18	APL on powerdown/power loss	ves	no	i	sturdy
	65	software	yes	ves	d,i,j	LEDs
	35	software	ves	ves	diij	LEDs
	16.5	APL on powerdown	yes	ves	i,j	LEDs
	16.5	APL on powerdown	yes	yes	ij	LEDs
	16.5	APL on powerdown	yes	yes	i,j	LEDs
	65	n/a	ves	yes	i,j	LEDs
	65	n/a	yes	yes	i,j	LEDs
	35(F)/65(BF)	software	ves.	ves	d,i.j	LEDs
	16.5(F)/65(BF)	APL on powerdown	yes	yes	i,j	LEDs
	16.5	APL on powerdown	yes	yes	i,j	includes 12MB cartridge
	16,5	APL on powerdown	yes	yes	i,j	includes 12MB cartridge
	16.5	APL on powerdown	yes	yes	i,j	includes 12MB cartridge
	32	AP on shutdown	yes	no	i (Apple)	5MB PD software
	32	AP on shutdown	ves	no	i (Apple)	5MB PD software
	65	software	yes	yes	b,c,d,i,j	
	65	software	yes	yes	b,c,d,i,j	
	26	AP on powerdown	yes	yes	b,c,d,i,j	
	26	AP on powerdown	yes	yes	b,c,d,i,j	
	35	APL on powerdown	yes	no	d,e,i	
	35	APL on powerdown	yes	no	d,e,i	
	23	APL on powerdown	yes	no	d,e,i	
	18	APL on powerdown	yes	no	d,e,i	
	35	AP on powerdown	yes	no	d,e,i	
	35	AP on powerdown	yes	no	d,e,i	
	35 65	AP on powerdown	yes	no	d,e,i d,e,i	
	65	AP on powerdown n/a	yes	no no	d,e,i	
	75	n/a	yes yes	no	d _i e,i	also reads IBM 5½ in. disks
	65	AP on shutdown	yes	ImageWriter/LaserWriter	a,c,copy,i,j	internal HC 1200bd modem & spkr. \$200
	65	AP on shutdown	ves	ImageWriter/LaserWriter	a,c,copy,i,j	internal HC 1200bd modem & spkr. \$200
	65	AP on shutdown	yes	ImageWriter/LaserWriter	a,c,copy,i,j	internal HC 1200bd modem & spkr. \$200
	65	AP on shutdown	yes	ImageWriter	a,c,copy,i,j	
	28	AP on shutdown	yes	ImageWriter/LaserWriter	a,c,copy,i,j	internal HC 1200bd modem & spkr. \$200
	n/a	n/it	yes	ImageWriter/LaserWriter	a.c,copy,i,j	
	29	APL on powerdown	no	no	and the second control of the second control	RLL encoding
	28	APL on powerdown	no	no		RLL encoding
	28	APL on powerdown	no	no		RLL encoding
	20	APL on powerdown	no	no		RLL encoding
	60	none	yes	no	i	9MB of PD software
	60	none	yes	no	1	9MB of PD software
	26	APL on powerdown	yes	no	i i i	9MB of PD software
	26	APL on powerdown	yes	no		9MB of PD software
	16	APL on powerdown	yes	no	i	9MB of PD software
	26	APL on powerdown	yes	no	i	60K disk cache; 9MB of PD software
	65	AP on powerdown	yes	no	c,d,h,i	
	28	AP on powerdown	yes	no	c,d,h,i	
	25	APL on powerdown	yes	no	c,d,h,i	keep both internal floppies
	18	AP on powerdown	ves	no	c,d,h,i	

f = security g = mount volume h = format i = backup j = spooling

*Utility Software: a = file search b = file recovery c = diagnostics d = park heads e = partitioning

Hard Disks Compared

Manufacturer	Product	Туре	Capacity (megabytes)	List Price	Cost per Megabyte	Warranty
roApp	ProApp 140SI	HDI (II)	143	\$4299	\$30.06	1 yr.
гоАрр	ProApp 320SI	HDI (II)	320	\$6999	\$21.87	l yr.
acet Computers	Administrator I	HD	150	\$5995	\$39.97	6 mo.
acet Computers	Administrator II	HD	300	\$7995	\$36.65	6 mo.
elax Technology	MacMate 20	HD	21	\$995	\$47.38	4 mo.
elax Technology	MacMate 40	HD	40	\$1495	\$37.38	4 mo.
elax Technology	MacMate 80	HD	80	\$1895	\$23.69	4 mo.
elax Technology	MiniMate 20	HD	20	\$995	\$49.75	4 mo.
elax Technology	MiniMate 30	HD	30	\$1195	\$39.83	4 mo.
elax Technology	Relax SI 20	HDI (SE)	20	\$895	\$44.75	4 mo.
elax Technology	Relax SI 30	HDI (SE)	30	\$1095	\$36.50	4 mo.
elax Technology	Refax SI 40	HDI (SE)	40	\$1395	\$34.88	4 mo.
elax Technology	Relax SI 80	HDI (SE, II)	80	\$1795	\$22.44	4 mo.
elax Technology	Relax SI 91	HDI (SE, II)	91	\$1895	\$20.82	4 mo.
elax Technology	Relax SI 150	HDI (II)	150	\$3995	\$26.63	4 mo.
elax Technology	HardPlus 20	HD	21	\$1195	\$56.90	4 mo.
elax Technology	HardPlus 30	HD	30	\$1395	\$46.50	4 mo.
elax Technology	HardPlus 40	HD	40	\$1595	\$39.88	4 mo.
elax Technology	HardPlus 80	HD	80	\$1995	\$24.94	4 mo.
elax Technology	HardPlus 91	HD	91	\$2095	\$23.02	4 mo.
elax Technology	HardPlus 150	HD	150	\$4395	\$29.30	4 mo.
elv	Rely Drive 65	HD	64.1	\$1995	\$31.12	1 yr.
ely	Rely Drive 110	HD	110	\$2595	\$23.59	1 yr.
ely	Rely Drive 240	HD	240	\$4495	\$18.73	1 yr.
odime	Rodime 20 Plus	HD	20	\$1195	\$59.75	1 yr.
odime	Rodime 45 Plus	HD	45	\$1595	\$35.44	1 yr.
odime	Rodime 20i Plus	HDI (Plus)	20	\$1195	\$59.75	1 yr.
odime	Rodime 45i Plus	HDI (Plus)	45	\$1595	\$35.44	1 yr.
odime	Rodime 450RX	HDI (SE, II)	45	\$1595	\$35.44	1 yr.
odime	Rodime 1000RX	HDI (II)	100	\$2995	\$29.95	1 yr.
odime	Rodime 1400RX	HDI (II)	140	\$3495	\$24.96	1 yr.
pectra Micro Development	Spectra Drive 20	HD	21	\$662,50	\$31.55	6 mo.
pectra Micro Development	Spectra Drive 40	HD	40	\$1295	\$32.38	6 mo.
pectra Micro Development	Spectra Drive 80	HD	80	\$1595	\$19.94	6 mo.
pectra Micro Development	Spectra Drive Internal 20	HDI	20	\$895	\$44.75	6 mo.
pectra Micro Development	Spectra Drive Internal 40	HDI	40	\$1295	\$32.38	6 mo.
pectra Micro Development	Spectra Drive Internal 80	HDI	80	SCHOOL ASSOCIATION OF STREET	CANADA CONTRACTOR OF THE CONTR	THE R. P. LEWIS CO., LANSING, MICH. 491-1403-1-140-1-140-1-140-1-140-1-140-1-140-1-140-1-140-1-140-1-140-1-140
unol Systems	SunStreak SCSI-30	HD	30	\$1595	\$19.94	6 mo. 6 mo.
unol Systems	the training of the control of the c	the control of the state of the control of the cont	the last of the second section of the last	\$895	\$29.83	THE RESERVE OF THE PARTY OF THE
unol Systems unol Systems	SunStreak SCSI-45	HD HD	45 70	\$1495	\$33.22 \$28.50	6 mo.
	SunStreak SCSI-70	Charles for the first terminal and a second of the first terminal and the second of the second of the second of	THE RESERVE AND ADDRESS OF THE PARTY OF THE	\$1995	ACCES AND	6 mo.
unol Systems	SunStreak SCSI-110	HD	110	\$2295	\$20.86	6 mo.
unol Systems unol Systems	SunStreak SCSI-180	HD HD	180	\$5795 \$6005	\$32.19	6 mo.
unoi systems uperMac Technology	SunStreak SCSI-245	HD HD	245 30	\$6995	\$28.55	6 mo.
uperMac Technology	DataFrame 30	THE RESIDENCE OF THE PROPERTY OF THE PARTY O		\$995	\$33.17	1 yr.
	DataFrame XP30	HD	30	\$1195	\$39.83	l yr.
uperMac Technology	DataFrame XP60	HD	60	\$1695	\$28.25	l yr.
uperMac Technology	DataFrame XP105	HD ₆	105	\$2695	\$25.67	1 yr.
uperMac Technology	DataFrame XP150	HD Comb (COE/20P)	150	\$3295	\$21.97	1 yr.
uperMac Technology	DataFrame XP60 + B	Comb. (60F/20B)	80	\$3495	\$43.69	1 yr.
uperMac Technology	DataFrame XP 150	HDI (II)	150	\$2995	\$19.97	1 yr.
upra Corporation	SupraDrive 20	HD	21	\$699	\$33.29	90 days
upra Corporation	SupraDrive 30	HD	31	\$995	\$32.10	90 days
upra Corporation	SupraDrive 250	HD	60	\$1995	\$33.25	90 days
upra Corporation	SupraDrive 60	HD	250	\$3995	\$15.98	90 days
/arp 9	Photon 20	HD	21	\$569	\$27.10	90 days
/arp 9	Photon 30	HD	31	\$789	\$25.45	90 days
Varp 9	Photon 40	HD	40	\$949	\$23.73	90 days
Arp 9	Photon 80	HD	80	\$1379	\$17.24	90 days
Varp 9	P20i	HDI (SE)	20	\$499	\$24.95	90 days
Varp 9	P30i	HDI (SE)	30	\$ 649	\$21,63	90 days
Varp 9	P45i	HDI (SE)	45	\$899	\$19.98	90 days

Legend:

AP = automatic park
APL = automatic park and lock
B = Bernoulli cartridge
BF = big floppy

Comb. = combination drive Dbl. = double F = fixed HD = external hard disk

HDI = internal hard disk HDR = removable media Mod. = adapter module PD = public domain

Average Access Time		Backup			
(milliseconds)	Head Parking	Software	Spooler Software	Utility Software*	Other Goodles
23	AP on powerdown	yes	no	c,d,h,i	
20	AP on powerdown	yes	no	c,d,h,i	
23	AP on powerdown	yes	no	i,e	built-in RAM cache, tape available
23	AP on powerdown	yes	no	i,e	built-in RAM cache, tape available
65	software	yes	no	d,g,i	extend warranty to 1 yr. for \$50
45	software	yes	no	d,g,i	extend warranty to 1 yr. for \$50
28	software	yes	no	d,g,i	extend warranty to 1 yr. for \$50
65	software	yes	no	d,g,i d,g,i	extend warranty to 1 yr. for \$50 extend warranty to 1 yr. for \$50
45	software	yes	no	d,g,i	extend warranty to 1 yr. for \$100
65 45	software software	yes	no no	d,g,i	extend warranty to 1 yr. for \$100
45	software	yes yes	no	d,g,i	extend warranty to 1 yr. for \$100
28	AP on powerdown	yes	no	g,i	extend warranty to 1 yr. for \$100
18	AP on powerdown	yes	no	g,i	extend warranty to 1 yr. for \$100
23	AP on powerdown	yes	no	g,i	
65	AP on powerdown	yes	no	g,i	
65	AP on powerdown	yes	no	g,i	
40	AP on powerdown	yes	no	g,i	
28	AP on powerdown	yes	no	g,i	
18	AP on powerdown	yes	no	g,i	
23	AP on powerdown	yes	no	g,i	
26	AP on powerdown	no	no	none	RLL encoding
26	AP on powerdown	no	no	none	RLL encoding
16	AP on powerdown	no	no	none	RLL encoding
85	software	yes	no	c,d,i	
28	AP on powerdown	yes	no	c,i	
85	AP on powerdown	yes	no	c,i	Military beneated a section of the s
28	AP on powerdown	yes	no	C,i	ACCOUNT OF THE PARTY
28	AP on powerdown	yes	no	c,i	
28	AP on powerdown	yes	no	c,i	
28	AP on powerdown	yes	no	c,i	101m - 6 mg - 6
65	software	no	no	d	10MB of PD software
28	AP on powerdown	no	no	none	10MB of PD software 10MB of PD software
28	AP on powerdown	no	no	none	10MB of PD software
65 28	software	no no	no	none	10MB of PD software
28	AP on powerdown AP on powerdown	no	no no	none	10MB of PD software
65	AP on powerdown	no	no	none	Tomb of 1D software
55	AP on powerdown	no	no	none	
55	AP on powerdown	no	no	none	
29	AP on powerdown	no	no	none	
27	AP on powerdown	no	no	none	
27	AP on powerdown	no	no	none	
65	AP on Finder shutdown	yes	yes	ij	RLL encoding
63	AP on Finder shutdown	yes	yes	i,j	RLL encoding
28	AP on Finder shutdown	yes	yes	ij	RLL encoding
16.5	AP on Finder shutdown	yes	ves	i,j	RLL encoding
16.5	AP on Finder shutdown	yes	yes	i,j	RLL encoding
28	AP on Finder shutdown	yes	yes	i,j	RLL encoding
16,5	AP on Finder shutdown	yes	yes	i,j	RLL encoding
25	software	no	no	c,i	White the state of
65	software	no	no	c,i	
28	software	no	no	c,i	
18	software	IIO	no	c,i	
65	AP on powerdown	no	no	h	
58	AP on powerdown	no	no	h	
46	AP on powerdown	no	no	h h	
33 65	AP on powerdown AP on powerdown	no no	no no	h	
65	AP on powerdown	no	no	h	
28	AP on powerdown	no	no	h	
20	At on powerdown	110	110		Name to the second seco

*Utility Software: a = file search b = file recovery c = diagnostics d = park heads e = partitioning

f = security g = mount volume h = format i = backup j = spooling

utility is the single most important piece of software you can have for your hard disk, and is one of the things you should look for in considering different hard disk packages. The absence of good backup software is no reason to reject a disk, as you can buy backup programs from third-party vendors at respectable prices. But the presence of a good backup utility is a definite plus.

Noise Level

It may sound trivial, but sitting for hours each day next to a whining or whooshing hard disk can drive you bonkers. The drive mechanism itself makes little sound; the noise almost invariably comes from a cooling fan. Some hard disks are cooled by convection or a heat sink

rather than a fan. If the one you are considering is fan-cooled, ask your dealer to let you sit with it for a while when it's running, to get a fair sample of its noise level. Better yet, see if you can take it home overnight; showroom noise can mask the actual loudness level of the drive. If you buy the drive by mail, find out if you can return it for a full refund if you can't stand the way it sounds.

Additionally, pay attention to how long the disk's connector cable is and ask whether extension cables are available. Situating the disk a few feet from your work station can sometimes eliminate the aggravation factor.

SCSI Addressing and Termination If you intend to use two or more hard

disks with the same computer, pay attention to how easy it is to change the SCSI address and the termination resistors. The SCSI protocol allows up to seven devices (including the computer) to be daisychained together. Each hard disk must have a different priority number, or SCSI address, and the chain must begin and end with a terminator. Hard disks always come with some preset SCSI address, and usually (though not always) with an attached terminator. If you chain together several disks, you must change their addresses to avoid conflict, and you must remove the terminators from the middle of the chain. The easiest disks to chain have external switches for changing the address and accept external terminators that plug directly into the SCSI connectors.

Spinning Platters

A hard disk consists primarily of a spinning metal platter (or several of them stacked together) on which the data is stored, and a moving read-write head rather like the tonearm of a record player. Disks containing multiple platters utilize one head per disk.

The hard disk platter is laid out like an English dart board. The concentric circles, which form a bullseye pattern, are called tracks. Each track is divided radially into a number of sectors, like slices of a pie. One sector holds 512 bytes of data (that's ½ kilobyte).

When the computer requests data, the read-write head moves to the proper track on the disk, waits for the disk to come around to the sector where that data is located, and reads it.

If a file is of any significant size, it's going to be stored in several different sectors on the disk, and those sectors need not be (and usually aren't) contiguous. The drive writes to available space wherever it can find it, and if the adjacent sector is already full, it goes and

finds one someplace else to hold the next 512 bytes of data.

When a drive in combination. with a specific Macintosh computer is writing to, or reading from, consecutive sectors on the same pass of the disk, it is said to be using 1:1 interleaving. When it can only read-write to every other sector, the interleaving is 2:1; every third sector makes it 3:1, and so on. Some say that the lower the interleave ratio, the faster the data gets collected or written, but this only gets at half the truth. In fact, the optimum interleave ratio depends on which computer is involved, and a ratio either too high or too low can result in loss of speed. The Mac II, with its rewritten SCSI driver and faster processor, can handle 1:1 interleaving effortlessly. The SE, which is slightly slower, optimizes at 2:1 interleaving. The Mac Plus can manage every third sector, for a 3:1 ratio.

Some manufacturers, such as SuperMac Technologies, achieve 1:1 interleaving with the SE and Plus by modifying the SCSI drivers, but that is not common. Although some hard disks have a built-in minimum interleave, in most cases the ratio may be set to fit the computer the drive is serving. One company (FWB) claims to have hard disk software intelligent enough to determine which computer it is connected to and then automatically optimize performance for that computer.

Why do mismatched interleaving factors slow down hard disk operation? Well, imagine a disk formatted 1:1 for use on the Mac II. It has data written to consecutive sectors: 1, 2, 3, 4, and so on. If the disk is then connected to a Mac Plus, the computer will read sector 1 and catch its breath, and then sector 2 will have passed by; so the Plus will have to wait a full revolution to read sector 2, then another revolution to read sector 3, and so on. On the other hand, imagine the disk formatted 3:1 for use on a Mac Plus: its data is written to 1, 4, 7, 10...2, 5, 8, and so on. If the hard disk is then moved to a Mac II, the computer will only be able to retrieve data from it at onethird its normal speed.

Portability

If you frequently need to transport your drive from place to place, the dimensions and weight of the unit will be important considerations. Will it fit inside your Mac carrying case? Into your briefcase? Does it weigh 5 pounds or 10 pounds? Additionally, you will want to inquire into its sturdiness. Is it equipped with internal shock mounts? What is its shock resistance rating (measured in g forces)? Can you drop it onto pavement without hurting it? If you intend to plant the disk on your desk and leave it there, these considerations become less important.

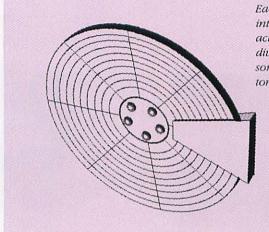
Reliability

Reliability is the most important consideration of all, and one of the hardest to measure. Great price, high capacity, and a truckload of features mean nothing if the disk isn't reliable.

Unfortunately, there is little information that will tell you whether a given hard disk is failure-prone under prolonged usage. You have to find out from someone who has used it a lot—by reading detailed hands-on magazine reviews; by raising pointed questions in a forum such as those on CompuServe, Delphi, or GEnie; or by asking around at your local Mac user group. (You can get the address of your nearest Mac user group by phoning Apple at 800/538-9696, asking for extension 500, and giving them your zip code.)



Jasmine's BackPac 40 offers portability without the inconveniences of an internal drive, by mounting directly on the rear of a Mac Plus.



Platters Revealed

Each concentric track on a bard disk is divided into sectors that hold 512 bytes of data apiece. An actual hard disk has bundreds of tracks, typically divided into 17 sectors. RLL coding, used on some drives, divides the same disk into 26 sectors, greatly increasing storage capacity.

Although hard disk reliability is difficult to assess, there are a couple of objective things you can look for in attempting to predict it. One is the length of the manufacturer's warranty. If an established manufacturer is willing to warrant the product for an extended period, that's about as close as you can come to a guarantee of reliability. The second is a factor some manufacturers list in their specs, MTBF (mean time between failures). The most common MTBF is around 20,000 hours, but a few drives carry a rating twice that high.

Such ratings should not be taken as definitive: 20,000 hours is about 2½ years of 24-hours-a-day running, and most drives on the market haven't even been in existence that long. The MTBF is arrived at by stress testing and then extrapolating the results, not by actually running the disk normally until it fails. Nevertheless, an MTBF rating considerably higher than the norm is an indication that the disk is probably more failure-resistant than the average.

Dollars per Megabyte

Even though price seems to be the topmost consideration in every buyer's mind, it shouldn't be. Everybody reads the right-hand side of a restaurant menu first, but most of us resist the urge to order Armadillo du Jour merely because it's cheap. You first find out if you're going to be able to digest it. The same principle applies when you're buying a hard disk. You want to be sure of getting one that will genuinely meet your needs; if it doesn't, a low price can turn out to be false economy. Cost may always be important, but cost should always be weighed against performance

needs. At the same time, don't fall for the myth that high quality always equals high price. Many lower-priced units have outstanding track records and thousands of satisfied users.

When comparison shopping, don't simply compare price tags: compare the cost per megabyte of storage. You may find that by upping your dollar outlay a little, you can up your storage capacity a lot. Megabyte costs tend to cluster in the \$25 to \$35 range, with wide deviations in both directions. The best bargain we've seen, by a large margin, is \$8.65 per megabyte for the Magic 300 hard disk from MacProducts. But to take advantage of it, you'll have to spend a couple thousand dollars more than you'd pay for a low-priced 20MB unit.

If a limited budget is the determining factor in what you are going to buy, be encouraged by the fact that there are nearly 20 hard disks available with list prices under \$700, and that discounts from list are very common among dealers and mailorder houses.



The Game Hall of Fame Annex

Where our intrepid reviewer chooses the best Macintosh games for the second year running

by Steven Levy

hen the Macintosh Game Hall of Fame was completed last year, no one really suspected that it would become a major tourist attraction, luring hundreds of thousands of vacationers off the interstates to crowd around banks of 9-inch screens and try their hands at *Airborne* and *Flight Simulator*. Indeed, that didn't happen. But some people did notice, particularly people associated with games that did not meet the rigorous entrance standards associated with the Hall. Some of those frustrated suitors even tried to hint that the Macintosh Game Hall of Fame was a mild fraud.

We are shocked. The Hall is by now a venerable instititution. It is a feature, not a bug, that its elective rules are Draconian. You don't want just anybody in a Hall of Fame. And though the Macintosh still lags behind many of its computer counterparts in number of games available, there are hundreds of contenders for the Hall, and only a very few spots open. In fact, we filled those spots last December, in our first induction. Then more games came out, some of them very good ones, and our attention was diverted to a few wonderful games that we missed the first time around. Therefore we contracted, at some expense to ourselves, to build an annex to the Hall. So don't say we haven't kept up.

Now for those election rules. We have always liked the rigid three-fourths requirement of the Baseball Hall of Fame—a player needs to be mentioned on fully 75 percent of the ballots before his plaque can

stand in the Hallowed Halls. But since there is only one elector in the Macintosh Game Hall of Fame—his byline appears above—the three-fourths standard is, well, moot. You get all or nothing.

Some critics have been so harsh as to suggest that one is not a sufficient number of electors for such a weighty institution. Obviously they have not read the Hall's motto–It's Only a Game. Some games you like a lot, some you like not as much. And some games suck fish. Here in the Hall, we believe in preserving our subjectivity.

Seriously–and we are serious about games, we promise–our Macintosh has been working overtime running the best entertainment software available. The criteria for selection are the same as last year: games that best take advantage of the Mac's strengths, games that assume the user's intelligence and inspire his or her creativity, and games that open up a world unto themselves. Neat-ness counts. Welcome to the Annex.



Arcade Game: Dark Castle

Most arcade games use the mouse like some brain-damaged joystick. With *Dark Castle*, you use the mouse to throw stones at vultures, bats, rats, and mutants—and the action seems natural (see Figure 1). Why didn't anyone else think of that? Meanwhile, your nonmouse hand moves your figure through a series of challenging screens, any one of which would make an impressive game in itself. The animation is superb, the puzzles imaginative, the digitized sound effects subversively humorous. It takes a while to get going, but

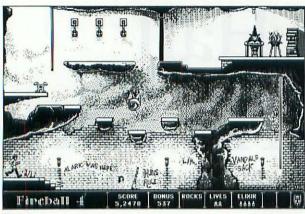


Figure 1

In Dark Castle the fireball is one of several weapons you need to win the game. In this scene you earn the right to face the wizard and receive the power of the fireball by dodging the fatal sweeps of the magic broom, immobilizing the burning eye before it bunts you down, and pulling the three chains in the correct sequence to lift the veil.

no matter what level of skill you've attained, you always know just how you blew it. And you immediately want to restart to do it right the next time.

The idea is to find and defeat a Black Knight, who will undoubtedly seem like an apocryphal figure to you for a very long time. It takes a lot of mastery to get to him. But you'll have a swell time trying. The good news is that a sequel is planned, called *Beyond Dark Castle*.

Leaving this one out of the Hall of Fame would be like ignoring Hank Aaron. No runner-ups in this category, as nothing comes close.



the Golj tion

Sports Game is the most competitive division in the Hall of Fame scramble. Last year's winner, *Mac-Golf,* has been improved. There are excellent emulations of skiing and tennis. And there are two good alternatives each in the sports of football and racquetball. One of the Macintosh football games, *NFL Football Challenge,* is an excellent gridiron strategy game, but the conversion from the IBM edition doesn't do enough with the Mac interface to win entry. As for racquetball, the Mac enthusiast can choose between a nifty game selling for under \$20 (*Primavera Racquetball*) and a feature-loaded premium effort (*MacRacquetball*) that allows modem competition. (In other words, with this one you can aim a kill shot from 3000 miles away.)

Still, it was a baseball game, *HardBall*, that slid its way into the Annex. Literally. Because the nicely digitized baseball sounds, including that of a sliding baserunner, are indicative of the attention to detail that makes *HardBall* a winner. By concentrating on the pitcher-batter duel and giving each moundsman up to four different pitches to mix, *HardBall* replicates the mental struggle at baseball's core and requires some hand-eye mastery for hitting and fielding (see Figure 2). One big complaint is that extra-inning games are prone to crash.

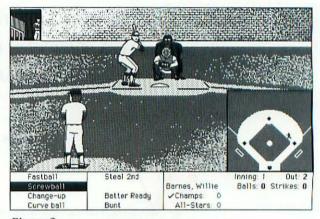


Figure 2
The pitcher-battle duel in HardBall: with two outs and a man on first, left-hand-bitting Willie Barnes should watch out for the screwball.

Though the publishers have not licensed the real names of baseball players, the different selection (and varying effectiveness) of pitches gives the unfamiliarly named hurlers personalities of their own. The computer opponent is a fair, if sometimes erratic, manager, but *HardBall* is best played human versus human.



Strategy Game: Go

You've probably heard about this complex, 4000-year-old Asian game, rich in nuance and deep in meaning. From a nondescript, grid-covered board and several hundred black and white stones, you can supposedly learn military strategy, human nature, yin, yang...the works (see Figure 3). But you probably have been too intimidated to learn how to play it—it would be like trying to learn Chinese. Go for the Mac; besides providing a fine computer opponent for old hands at the game, *Go* specializes in bringing the novice up to speed. You begin with an excellent participatory tutorial—one of the better uses we've seen for OWL's hypertext *Guide* program. When you're ready to challenge the Master, there are many ways to take it slow—you can limit the board size, get extra pieces, and ex-



The Multiplayer Wing

Finally we are beginning to see Macintosh games that welcome not one or two but literally dozens of players. We're accommodating them in a special wing of the Hall of Fame. (Admission extra.)

Online Game: Air Warrior

You think you liked Flight Simulator? Imagine using it in conjunction with 20 other people, each of you controlling a classic World War II plane like a Spitfire, a Mustang, or a Zero. The 20 of you are divided into three teams (countries), and as you fly over the territories of those three lands, you encounter one another. You can team up with allies, bomb enemy airfields, and engage in dogfights with foes. And you can stop imagining-that game is here, now, on the GEnie online service.

It works like this—you down-load the Mac version of the game from GEnie, practice a little, then log back on (late weekend days seem the busiest times) to scuffle up some dog-fighting (see "Air Warfare"). Beware—you are bound to encounter some bona fide aces. Some Air Warrior masters have devoured military textbooks like

Fighter Combat Tactics and Maneuvers, with all their devastating applications to this game.

Solution: team up with experienced allies. Look for wounded planes trying to reach home base—and pounce. You can even taunt your doomed foe by sending a "radio" message.

The only drawback is cost. The initial capital outlay is lower than for most games (the \$18 GEnie sign-up fee), but at \$5 an hour, addiction can jeopardize your livelihood. On the other hand, it's cheaper than flying lessons.

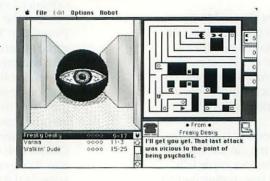
Network Game: Maze Wars+

A classic game for networks, optimized for AppleTalk. The premise is simple: you move through a four-level maze, seeing what your game piece sees. When you spot someone else's marker, shoot it. Avoid being shot by someone else. Dull when played against a computer, hysterical fun when five or more people engage. Who said networks were for work?



Air Warfare

A Mustang P51D comes in for a landing in Air Warrior. This is Flight Simulator with a difference: an opponent in Detroit flying a Zero might gun you down.



Don't Eyeball Me, Boy!

Hunting through the labyrinth, Maze Wars+ players confront opponents (like the eyeball) face to face. Invective can be sent over the network using the game's message feature.

tract hints from the Go Master. Best of all is a feature wherein your computer explains each of its moves, and even provides a complete analysis of the game thus far.

With all of the cultural overhead removed, you're free to divine the ages-old lure of this deceptively simple game. And if you want a real opponent and can't find one in the neighborhood, you can use the two-player-by-modem option to challenge a more distant friend.

A close contender in this category is *Chessmaster* 2000, now the premier chess game on the Mac. Every feature you can think of, and at its top levels it makes anyone less than Spassky look spastic.

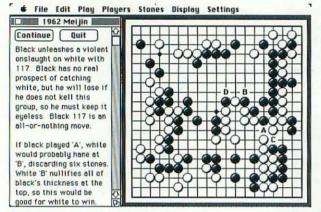


Figure 3

In Go, opponents try to capture territory by positioning stones in strategic locations. Here Go for the Macintosh diagrams the progress of a historic march.



Simulation Game: Ferrari Grand Prix

Simulation games depend on constructing a situation that allows the player to totally lose him- or herself in the portrayal of some situation not easily experienced without a computer. Flying a plane and controlling a submarine have been successfully emulated. And now: driving a low-slung Ferrari over tricky European race courses (see Figure 4).

If you think driving on the freeway is tough, try your hand at the Formula One racing circuit. Controlling the car here is a bit tough to master, especially when shifting gears, braking, and negotiating hairpin turns. Going 120 miles an hour here feels like 120 miles an hour. (And you can approach 200 mph.) While you're zipping along at breakneck speed, the concentration required is terrific—so much so that you may feel, yes, this is what Grand Prix Racing is really

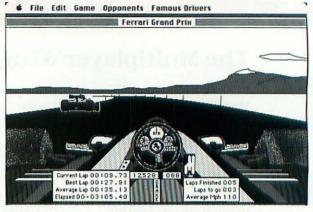


Figure 4
The view from a Ferrari's cockpit. Approaching a busy curve at high speed requires concentration.

like. But each time you strap yourself in, you find yourself getting better; if you stick with it, you'll soon be good enough to challenge the computer-controlled opponents. (You can "cripple" them until you dare to take them on at their best.) After a few hours of ultrahigh-speed racing, however, you may want to relax with *Golf Cart Simulator*; just to calm your nerves.

Also in the best simulation tradition, you have control over your environment–*Ferrari Grand Prix* lets you design your own racecourses, even down to the scenery.

Adventure Game: Tass Times in Tonetown

Not much new in this category. Two more efforts by the makers of last year's choice, *Déjà Vu*, maintain graphic excellence and attention to detail—if not plot originality—with *Uninvited* and *Shadowgate*.

But the Annex welcomes a sleeper—*Tass Times in Tonetown*. To be sure, some of the logic behind this game is rather warped—but that is only in keeping with something that seems a cross between *Raw* magazine, *The Face*, and the "Bizarro World" of DC Comics. Your mission is to find your missing Grandpa, but the weird dimension you must seek him in is an irreverently depicted punkish milieu. The currency is guitar picks, the haircuts are Mad Max-ish, the language is *Clockwork Orange*, and the satire is gentle but insistent. The graphic interface is easy to work with, and if some of the puzzles seem solvable only after some therapeutic headbanging—or a few hours of MTV—so what? Tass times are fun times.

As they did last year, also-ran honors go to Infocom. Its better adventure-game efforts this year include Doug Adams's funny but all-too-real *Bureaucracy*, as well as *Stationfall*, the delightful follow-up to the classic *Planetfall*. But these text games are doomed to runner-up-dom until Infocom addresses the virtues of the Mac interface more creatively.

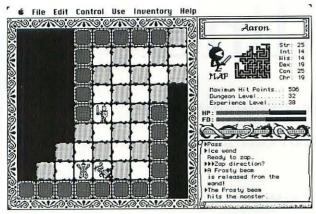


Figure 5

Aaron, a 37th-level Knight, blasts a centaur with an ice beam in The Dungeon of Doom. This is the 32nd level of the dungeon, dangerous turf.



Role-Playing Game: The Dungeon of Doom

Shareware lives, sort of. Version 4.0 of this standard go-down-into-the-dungeon epic is still, at this writing, available from user groups and online services for perusal and use; if you like it and are honorable about it, you'll send the author a well-deserved \$25. But word has it that the next version of the game will be commercially distributed.

The current version, though, is well worth seeking out. Game play is brisk; you control one player whose attributes and equipment grow more potent as the game progresses. Movement is with the mouse, and there is a handy automatic mapping feature that helps make *The Dungeon of Doom* a more casual



Last Year's Winners

Best Arcade Game: Airborne, Silicon Beach Software

Best Role-Playing Game: Wizardry, Sir-Tech Software

Best Adventure Game: *Déjà Vu*, Mindscape Best Sports Game: *MacGolf*, Practical Computer Applications

Best Strategy Game: *The Ancient Art of War*, Brøderbund Software

Best Brain Game: *Life*, public domain
Best Simulation: *Flight Simulator*; Microsoft

venture than some of its more somber and paperwork-intensive counterparts (see Figure 5). Of course, the monsters—42 varieties contained within—become more heinous as you sink deeper into the mire. There are 40 levels to descend until you can recapture the Orb, whatever that is. If you dó spend the time to win (it'll take quite a few sessions), the game will reshuffle itself so the next time you play, it won't be a dull rerun. But with monsters named Electric Penguin and Black Pudding, how could it be dull?

A different brand of role-playing game—one with actual educational implications—is *Seven Cities of Gold*, where you get to be a conquistador colonizing the Americas. The game, first introduced on other computers, would be even better if the graphics were redrawn to take greater advantage of the Macintosh's capabilities.



Brain-Teasing Game: The Fool's Errand

This game is like a jigsaw puzzle: a lengthy project to be attacked piece by piece. A certain satisfaction comes upon completion, but the real enjoyment is of a rainy-day variety, as you idly tackle this section or that. *The Fool's Errand* has for its plot a standard fantasy quest, but embedded in the seemingly endless scroll that narrates the story are 42 puzzles to be solved (see

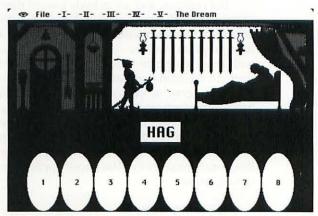


Figure 6

One of the hardest puzzles in The Fool's Errand requires you to push a certain combination of eight buttons correctly to build a sentence.

Figure 6). Most involve word-play of some sort, others call for some degree of dexterity, and a few involve rearranging pieces like–surprise!—a jigsaw puzzle.

If any puzzle has you stymied, you can go on to the next and come back later. If you really get stuck, you can buy a hint book.

But you don't have to be a genius to get through this—just patient. If there are still families that like to tackle puzzles together, this is the one to try. \Box

Inside Outliners

A guide to outliners: programs that put a new twist on an old idea

by Robert C. Eckbardt

remember how much I hated learning to outline, back in junior high. I rated outlining up there with sentence diagramming as a technique designed by teachers to make writing as unpleasant and difficult as humanly possible. I used to copy and recopy outlines to get them right—and then dismiss the whole exercise as futile once I'd written a paper that bore little relation to my hardfought plan.

But outlines, and my attitude toward them, have changed now that my pencil and piles of cast-off outlines have been replaced by a Macintosh and an outliner program. And the change is partly because the outlines I create now hold the potential to be far more than just skeletons for future writing projects. Outliners can serve, among other things, as simple databases, appointment books, automatic-dialing phone books, and storage bins for pictures or stray text.

So before you dismiss outliners as just updated versions of an old torture technique, consider what this burgeoning area of Macintosh applications can do for you.

I. Configurations

All outliners perform the same basic job: they provide an easy way to create classic outlines (with subordinate topics nested under general topics) and to move, rearrange, temporarily hide, alphabetize, and otherwise organize all the topics. Similar though they may be at heart, however, outliners come in many different forms, from desk accessories or minor segments of major applications to full-scale applications replete with extras. Which kind of outliner is for you depends on how you intend to use it, the amount of RAM in your Macintosh, and several other factors.

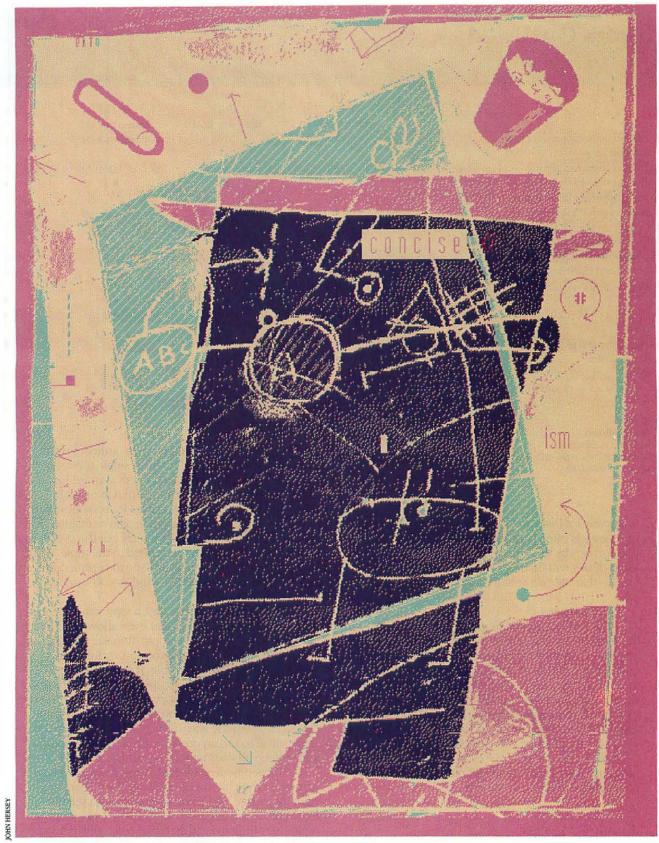
You can call up desk accessory outliners like Acta, Voila, and Outlook (included in SideKick) at any time from almost any application—whether you're using a 512K Macintosh or running with a full MultiFinder set.

But because they are desk accessories, these programs lack many of the special features that application outliners offer. And although they are small by application standards, desk accessory outliners can still add considerable bulk to your System file–from 40K for *Acta* to 113K for Outlook.

Application outliners, such as *ThinkTank* and *MaxThink*, work with other applications under Multi-Finder, but only if you have enough memory. Running *ThinkTank*, for example, with only one other program requires at least one megabyte of RAM. If you don't have enough memory, you must quit your current application, open the outliner, save your outliner work, and finally, reopen your application. Since outlining is rarely an end in itself, using an outliner in this way largely defeats its purpose. If you can spare the memory, however, an application outliner such as *Think-Tank* used under MultiFinder is just as convenient as a desk accessory, and more powerful.

As outlining catches on, more application outliners are combining full-powered outlining with other useful functions. The best known of these high-powered models is *More*, which can convert outlines into presentation graphics, create appointment calendars in outline form, and even dial the phone for you. *MindWrite* doubles as a basic *MacWrite*-like word processor. In both *More* and *MindWrite*, the outliner and the other parts of the program work together to make a whole that is greater than the sum of its parts.

The outline view in *Microsoft Word* 3.0 is an example of the final type of outliner: a minor outlining facility resident within a major application. Unfortunately, *Word*'s outline view seems more stuck-on than built-in. Although switching between outlining and writing views is quick and easy, the outline facility



Outliners Outlined

	Acta 1.2	Voila 1.0	Outlook	ThinkTank 512
Type of program	DA	DA	DA	application
Program size	52K	83K	111K	158K
Outline size limit	limited by RAM	limited by RAM	limited by RAM	270K
Maximum number outlines open at one time	1	1	limited by RAM	1
Automated window tiling				
Maximum number characters per line	32,767	80	431	77
Separate windows required for graphics or overflow		•	•	•
Allows multiple paragraphs in one topic	•			
Headline attributes can shrink to one line	•	topic is one line	topic is one line	topic is one line
Text wraps	•			
Displays topics to designated level				
Degree of control over fonts and sizes	some	some	some	limited
Degree of control over text style	some	some	some	limited
Reverse sorting		•		
Search	•	•	•	•
Replace		•		
Mark and gather		THE STATE OF THE S		
Prints topics to designated level		•		
Choice of outline scheme	•	•	•	
Exports outlines	●1	●2	text only3	text only
Maintains outline format in exported files	numbering only		•	

¹To MacWrite: text

is awkward at best, and the interaction between the two views is often confusing and sometimes frustrating. Perhaps by the time you read this, built-in outlining facilities will be more numerous—and more useful—than *Word*'s solitary and sorry example.

II. Features

The operating style and features of outliners on the market vary considerably. Differences range from which key command performs a function to the way outlines are exported to other programs. Some of these discrepancies may seem minor, but they can significantly affect the usefulness of an outliner. For example, if the procedure for moving outline topics seems counterintuitive to you, the program may drive you crazy long before you derive any benefit from it. Or if you need to create elaborately styled outlines, a program that permits only rudimentary use of Style commands won't be much help.

One basic difference between outliners is the amount of text permitted within a single topic. In *Voila* the maximum number of characters allowed in a single topic is 80, while in *More* the maximum is 127. With either program, if you have a lot on your mind (suppose while outlining a paper, you're inspired to type an entire paragraph), you must put the overflow text in a special window appended to the topic. With *Voila*, this means that you can't see the entire outline as a unit, since overflow text windows obscure the underlying outline.

In *Acta*, on the other hand, a topic can contain an unlimited amount of text. *Acta* even allows multiple paragraphs within a single topic. To make the outline easier to navigate and view, you can shrink topics so that only the first line is visible. If you use outlines as precursors for written work, and write by building on your outlines paragraph by paragraph, outliners that force you to put long sections of text in special windows can get in the way. In such a situation, it makes more sense to use an outliner like *Acta*, which allows you to keep all your text in the outline window.

A related issue is whether topics wrap to a new line when they hit the right side of the screen, or sail right into space, requiring you to scroll to see the text that runs off the edge. If you regularly write lengthy topics, scrolling to read an entire topic gets tiresome quickly. In both *SideKick*'s Outlook and *More*, topics

²To More, ThinkTank; text

³Retains indents and numbering

⁴To Jazz, MacWrite, ReadySetGo (MS-DOS), ThinkTank 512, ThinkTank 2.0 (MS-DOS), Microsoft Word; text

More 1.1	MindWrite 1.0	Microsoft Word 3.01
application	application	module
315K	224K	370K
limited by RAM	none	none
6	limited by RAM	limited by RAM
127	no limit	no limit
10.00 - 0.00 - 0.00 - 0.00 - 0.00 - 0.00 - 0.00 - 0.00 - 0.00 - 0.00 - 0.00 - 0.00 - 0.00 - 0.00 - 0.00 - 0.00	•	•
topic is one line	•	
	•	•
•	with difficulty	to first 9 levels
some	good	none
good	good	none
•	•	B Commercial Commercia
•		•
		•
•		
•4	text only	Water and the second se
		n/a

run off the edge of the screen. *Acta*'s topics break to a new line when they come to the edge of the window, no matter how wide or narrow the window may be. And *MindWrite* text breaks either according to the margins set by the ruler or at the edge of the window, depending on which option you choose.

Outliners also vary in their text-editing and formatting capabilities. In *MindWrite*, for example, you can double-click on a word to select it, but you cannot extend the selection to neighboring words by dragging (although you can in most other outliners and word processors). On the other hand, *MindWrite* has an editing feature I believe is unique: if you want to turn a section of your outline into a separate outline, or to reorganize what you have, you can select any combination of noncontiguous topics and cut, copy, or move them.

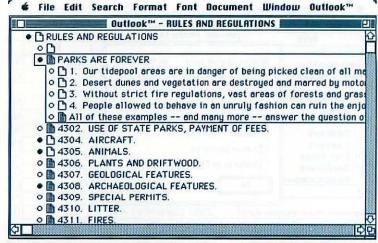
Differing text styles and sizes can do as much to make an outline communicate quickly and effectively as indents, numbers, and letters can. Some programs, such as *ThinkTank*, provide only a limited number of fonts, sizes, and styles to choose from, and require you to treat the entire outline the same way. Others, such as *Voila* and *Acta*, permit you to select the font, size, and style for headlines of a given level, or for a se-

lected topic and its subordinates, or for some other portion of the outline, but not for individual words. *More, Word,* and *MindWrite* are the most versatile, permitting unlimited formatting of characters, words, and topics.

Although all outliners use indentation to indicate the topics and subtopics of an outline, every program has its own way of marking individual topics and indicating hidden subtopics and text. Most outliners use symbols of one sort or another–bullets, pluses and minuses, open and closed triangles–as topic markers. Word's outline view is a notable exception; unless you select the Renumber command, the topics in a Word outline contain no markers at all. Instead, Word uses ellipses and underlining to indicate collapsed subtopics and hidden text. There's little to recommend one symbol system over another; only Word's lack of marker symbols is clearly inferior.

Many outliners allow you to change the topic markers to one of several traditional outline-numbering schemes. Some, such as *Word, MindWrite*, and *More*, let you view the numbers on screen. Others, such as Outlook and *Acta*, number the outline only when you print it or save it as a text file. For creating technical reports or documentation that requires traditional outline-numbering schemes, you'll probably want to use an outliner that can number (and renumber) topics on the screen while you work.

Possibly the greatest advantage of outlining on a computer is the ease with which you can move topics and subtopics from place to place and promote or demote them. But here again, outline-editing methods differ from program to program. With most outliners (*Word's* outline view is a notable exception), you can



Outlook

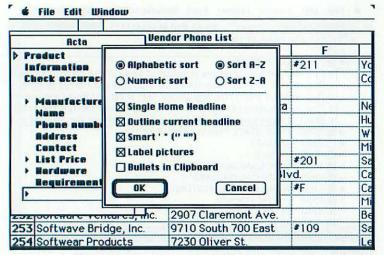
SideKick's Outlook uses black circles to indicate the presence of subtopics. The page-with-text icons indicate document windows. Long topics run off the edge of the screen; to read them, you must use the scroll bar at the bottom of the window.

use the mouse to drag a topic up, down, left, or right. And while all outliners have keyboard commands for left and right movements, only a few (such as *Voila* and *More*) have keyboard commands for moving topics up and down. So if you prefer to work from the keyboard, be sure to get an outliner that has a complete set of outline-reorganization keyboard commands.

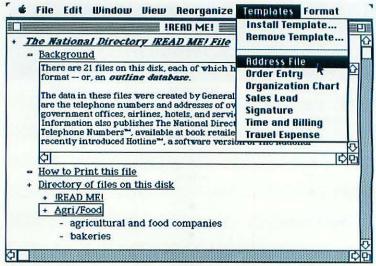
Since you will often want to copy an outline to another application, an outliner's ability to export outlines with formatting intact is an important consideration. Since both *Word*'s and *MindWrite*'s outliners are meant to be used within their own programs, they can export outlines only as plain text with no structure.

Most other programs are more understanding. Acta, for example, can create either text or MacWrite files that not only preserve their outline structure but also include labels or bullets for every topic (if you prefer, you can create a file with no topic labels at all). More does even better: its Export command creates outline files with nearly all the formatting intact in Word, MacWrite, Jazz, and plain text formats. And if you are in More's Tree or Bullet Chart mode, the Export command creates a PICT (Draw) file containing the current tree or bullet chart.

A final difference in operating style has to do with how various outliners handle graphics. Some, such as *Acta*, place graphics directly in an outline. In programs such as *Voila*, however, you must place each graphic in a special window, which means that only one graphic can be viewed at a time. If you want to be able to scroll through an outline and quickly view all the graphics it contains, be sure to use an outliner that can handle the task.



This outline has been created with Acta, a desk accessory outliner, while working within Excel. Interestingly enough, a specialized version of Acta is now included with the latest version of More so that you can create outlines within other programs and save them in More's file format. You can later elaborate on the saved outlines with More's powerful features.



More

More 1.1 comes with a National Directory of Addresses and Telephone Numbers, a database that demonstrates how outlines can be used to store and retrieve information. The Template menu inserts preformatted topics into any outline and gives an idea of some other things More is good at.

III. Beyond Outlining

While not all outliners are equally capable, all of them can do more than just make outlines. Put another way, electronic outliners have transformed the outline format into something more than just a way to organize your thoughts. *More* outlines, for example, can generate bullet charts and other types of presentation graphics. But everybody knows that. What everybody doesn't know is that outliners can be used in many ways and in many situations, some of them obvious, others not so obvious.

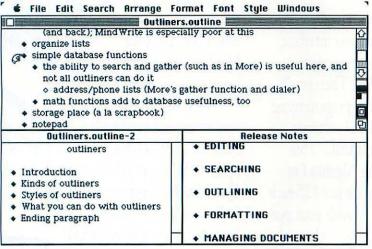
For example, in addition to helping you organize thoughts, outliners enable you to organize almost any kind of list, alphabetically or numerically. If you create lists in a word processor and sort them by hand, using an outliner instead will save you time and frustration. All outliners can sort—alphabetically from A to Z and numerically from small to large. Some can also sort backwards, and some sort dates or times. *More*, for example, does all these things.

The way outliners sort numerical lists is often less than intuitive, however. In some programs, such as *ThinkTank*, all numbers to be sorted must contain the same number of digits, so you must add one or more zeros before smaller numbers. Other outliners, such as *Acta*, sort only integers and ignore any numbers to the right of the decimal point.

Because all outliners have at least a rudimentary Search command, outlines can also serve as simple databases. You could, for example, put your phone and address list in an outline, keep expense records in an outline, or create a reference outline of area codes that lists their location and time zone. The more sophisticated capabilities of some outliners can greatly increase the utility of such database outlines. *More* clearly provides the best example. It has time and date stamps that make entering time information for such things as expense records much easier. *More*'s search-and-gather and math functions enable you to sort an expense list by type of expenditure and then determine the sum for each type. And once you locate a number on your outline phone list, *More* can actually dial it for you.

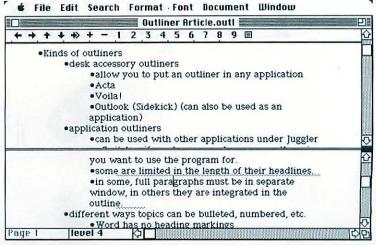
Outlines can also serve as storage bins for stray graphics and text. Desk accessory outliners, for example, work well as replacements for the Scrapbook. And since an outliner, unlike the Scrapbook, can create and open many files instead of just one, you have a lot more flexibility for organizing material. You might store images in one outline and text in another, say, or create separate outlines for different subjects and put images and text together. To find images quickly, you can type one or two descriptive words in the topic to which the graphic relates and then later search for one of the words.

An outliner can also serve as a replacement for the Notepad desk accessory. Again, outliners have the advantage of being able to open more than one notepad/outline file. And even the simplest desk accessory outliner has more sophisticated text-editing and formatting capabilities than the Notepad.



MindWrite

You can use MindWrite's ability to tile as many as four windows on screen to view different outlines or get different views of the same outline.



Microsoft Word

You can manipulate a Microsoft Word outline by using keyboard commands or the icons in the outline icon bar. Gray underlining indicates hidden subordinate topics; the level of the current topic appears in the lower-left corner.

Desk accessory outliners can also be used to create custom help files for other applications. You could create a help file with instructions for features and commands you find a little too complex, or for others who use your computer and need a helping hand. *Acta* makes such a project especially easy with its Acta File feature, which opens a specified file automatically every time you select *Acta*.

On-screen appointment calendars are another function for which electronic outlines are well suited. Although you can create one by hand with any outliner, *More's* Calendar command automates the process. And a calendar feature can serve other purposes as well. For example, it can transform a whirlwind schedule of parties and dinners into a sobering expense report—like Cinderella's glittering carriage into a dusty pumpkin—as future engagements become fond memories.

It should be apparent by now that outlines have changed since my junior-high days. With all the advantages of on-screen editing, outlines are no longer a chore to create. Even the most basic outlining program serves a wide variety of functions. And with high-powered outliners such as *More*, the number of purposes outlines can serve is greater still. If you've been put off by memories of the outlines of your youth, now's the time to look again and see how much outliners have to offer. \square

Leaps and Bounds.

hings are always hopping here in the halcyon hamlet of Marlow, NH (pop. 550). We'll jump through hoops, bend over backwards, and do assorted acrobatics in order to stay head and shoulders above the Mac mail order crowd.

Our new shipping policy is a prime example — practically every non-C.O.D. order phoned

in by 8:00 PM EST
will ship Airborne
Express for next day
delivery. See our complete product listing
on the following
pages for details.
Speaking of
acrobatics,
in Talk can help

perfect your data transfer act. It has a powerful command language for performing unattended sessions, and macros for speeding up the rest. The latest version offers keyboard support for the Mac SE and II, clipboard/graphic transfers,



and many new features for faster operation and improved user interface.

Are you facing some serious programming hurdles? Then you'll appreciate the range of programming libraries and educational software available with **True BASIC**. This month we're offering **Algebra I** or

Calculus for just \$25 each with your purchase of True BASIC.

Remember, this BASIC is portable to other systems.

The BASIC Inc.

The BASIC Inc.

Having trouble remembering to do things? Like checking your calendar? The Smart

Alarms desk accessory rings a bell and pops on your screen to remind you of memorable to-do's and appointments, no matter what program you're in. If reminders have passed while your Mac is off, they'll

come up immediately

when you turn your

to faster.

Mac back on. You may

never miss a meeting again.

A mouse isn't the only
way to move around a Mac.
And, for all of us who grew
up in (or fell out of) the fast lane, a

QuickStick offers the more familiar
feel of four-on-the-floor — a threebutton joystick. Careen around
cursor corners! Cruise
across columns! Have
more fun getting
where you want



Any port may do in a storm, but it helps to have a lot of options for docking to your Mac. MacEnhancer expands your horizons by giving your Mac an additional parallel port and two RS-232 serial ports. Now you can connect daisy wheel, dot matrix, and laser printers to your printer port, and still have room for a modem and scanner as well.

Your computer graphics will earn far more oooh's and ahhh's with Cricket Draw. It goes

beyond WYSIWYG (i.e. the 72 dpi your screen can show you) and lets the Laser-Writer take advantage of its full 300 dpi. Cricket Draw \$175 You can shade

objects using a 0% to

100% gray scale, create shadows and fountains, and bind text to just about any curved line or shape you left brain can imagine.

Cricket Software

Now it's a snap to upgrade your Mac 512 to 2 megabytes. A MacSnap 548 from Dove Computing to be precise. They have a full line of easy-toinstall memory upgrades for all kinds of Macs. All come with print spooling software and a utility that lets you manage up to eight programs at once with just a single disk drive, virtually eliminating disk swapping.

If you need to juggle a profuse

REFLEX PLUS: ####

fountain of tacts and stats. you'll flip over Borland's Reflex Plus

relational database. Linking files is as easy as drawing lines

Reflex Plus \$165 on your screen.

Macros, built-in number crunching, extensive sort features, and many other features make Reflex Plus the ideal way to turn disorganized data into useful information.

The new improved version of Dollars & Sense (the popular Mac bookkeeping system) offers multiple windowing, custom queries and reports, enhanced graphing, and



sub-account capabilities. And, until 12/31/87, just send Monogram your proof of purchase and warranty card, and you'll get a T-shirt that's in perfect taste for playing

tennis at the club, or slumming back at the office.

If you need help balancing your Mac act, talk to one of our trained sales consultants. They can help you select the products that will make your Mac run rings around your paperwork. And remember, you won't have long to wait - just about every order phoned in to us by 8:00 PM EST flies by Airborne Express for next day delivery.

Even as you sleep, your order will be leaping and bounding to your door.



MacConnection

Wenowoffer

SOFTWARE

NCP denotes not copy-protected. CP denotes copy-protected.

Aegis Development NCP
Doug Clapp's Word Tools \$42.
Doug Clapp's Word Tools \$42. Affinity Microsystems NCP
Tempo (power user's macro utility) 54.
Allan Bonadio Associates NCP
Expressionist (equation processor) 52.
ALSoft NCP
Distriction of the section of the se
DiskExpress (maximize disk performance) 26.
Altsys NCP
FONTastic Plus (advanced font editor) 48.
Fontographer (LaserWriter font editor) 243.
Ann Arbor NCP
FullPaint (advanced Paint program) 49.
Ashton-Tate NCP
dBASE Mac 1.0 (relation, reg. MacPlus) 299.
Batteries Included NCP
Thunder! 1.23 (spelling checker) 31.
Battery Pak (9 desk accessories) 31.
Berkeley System Design NCP
Stepping Out (requires 512k) 55.
Blyth NCP
Omnis 3 Plus (multi-user available) call
Bogas Productions NCP
Studio Session (music creation) 57.
Heavy Metal Rock or Country Disk 15.
Borland International NCP
Turbo Pascal Tutor 49.
Numerical Methods Teelbox
Numerical Methods Toolbox 59.
Sidekick 2.0 (includes MacPlan) 59.
Turbo Pascal (HFS compatible) 59.
Reflex Plus (info management tool) 165.
BPI Systems NCP
General Accounting (full-featured) 129.
BrainPower NCP
StatView (statistics package) 34.
Graphidex (DA graphics organizer) 65.
Designscope (electronic circuit design) 128.
MathView Professional (num. analysis) 149.
StatView 512+ (req. external drive, 512k) 178.
Bravo Technologies NCP
MacCalc (easy to use spreadsheet) 79.
Broderbund CP
Print Shop (create cards and memos) 38.
Geometry (over 350 problems!) 63.
Physics (over 300 problems) 63.
CAMDE NCP
Nutricalc Plus (dietician's delight) 175.
CasadyWare NCP
Fluent Fonts (two-disk set)
Fluent Laser Fonts (Vols. 1-15) each 46.
CE Software NCP
Calendar Maker (create custom calendars) 27.
Disktop 3.0 (powerful DA Finder)
Centram Systems West CP
TOPS (file-server/LAN software) 119.
Challenger Software NCP
Mac3D (3D graphics, CAD features) 127.
Chang Labs NCP
Rags to Riches Led., Pay. or Rec 123.
Rags to Riches Three Pak
The C.A.T. (contacts, activities, time) 239.
Inventory Control or Professional Billing 239.
Professional Three-Pak
Cortland CP
TopDesk 2.3 (7 new desk accessories) 33.

MacConnection Double Special

through December 31, 1987

ACCOLADE Hardball

Baseball fans beware! Here's America's favorite game complete with umpire's calls and cheering crowds. Play against a friend or your Mac. Bunt! Steal! Even switch pitchers! (Hotdogs not included.)

- Smooth animation
- · Superb graphics and sound effects
- Highly addictive

KRAFT SYSTEMS QuickStick

Don't be a wimp! Round the bases at top speed and slide safely into home with this dual-response device. Combines cursor response of a mouse with the fun of a joystick. Great with games, goes extra innings at work.

- Three-button joystick
- · Four separate modes of operation
- · Includes mouse port on joystick

Save on the double-play combination \$54.

Cricket Software NCP
Statworks (statistical package) 75
Cricket Graph (multiple windows) 124
Cricket Draw (advanced draw capabilities) 175
Data Tailor NCP
Trapeze (spreadsheet, regs. 512k) 159
DataViz NCP
MacLink Plus (transfer Mac/IBM data) 149
Digital, etc NCP
Turbo Maccountant (GL, AP, AR, Payroll) 255
Dove Computer NCP
RAMSnap (RAM Disk/Disk Cache) 22
Dubl-Click Software NCP
Calculator Construction Set
World-Class Fonts! (both volumes) 47
WetPaint Clip Art (both volumes) 47
Electronic Arts CP
Deluxe Music Construction Set 2.0 62
Enabling Technologies NCP
Easy3D (create solid 3D objects) 79
Pro 3D (3D shaded modeling) 199
Enzan-Hoshigumi USA NCP
Japanese Clip Art Scroll 1 "Heaven" 59
Japanese Clip Art Scroll 2 "Earth" 59
MacCalligraphy (create unique designs) 115
Fifth Generation Systems NCP
FastBack Mac (powerful backup utility) 59
Forethought NCP
Factfinder 1.1 (information organizer) 39
FileMaker 1.0 (custom design reports) 49
FileMaker Plus 2.0 (database) 139
PowerPoint 1.0 (presentations) 189
Foundation Publishing NCP
Comic People (create your own characters) 26
Comic Strip Factory (create cartoons) 59
FWB Software NCP
Hard Disk Backup or Hard Disk Partition 37

Hard Disk Util (program backup) \$55
Great Wave Software NCP
KidsTime (educational, ages 3-8) 27
TimeMasters (learn about time, ages 4+) 27
ConcertWare + (music composition) 39
ConcertWare + MIDI 79 Greene, Inc NCP
QuickDEX (address book) 24
Hayden Software CP
MusicWorks (songs for your Mac) 29
Score Improvement for the SAT
Ideaform NCP
MacLabeler or DiskQuick
Imagine NCP
Smart Alarms (DA reminder system) 38.
Multi-user Smart Alarms
Infosphere CP
LaserServe (network software) 64
ComServe (NCP, modem sharer) 124
MacServe (network software) 164
MacServe (network software)
MacDraft 1.2A (requires 512k) 157.
LaserWare CP
LaserWorks (requires 512k, LaserWriter) 195
LaserPaint (requires Mac Plus) 315
Notes forExcel, Microsoft Works, PageMaker or Word each 41
PageMaker, or Wordeach 41
Legisoft/Nolo Press NCP
WillWriter 2.0 (prepare your own will) 30.
Letraset NCP
Ready, Set, Go! 4.0 (page layout) 289.
Linguist's Software NCP
Tech (1000 different symbols) 59.
Foreign Language Fonts cal
I DICIGIT Language I Dills
Living Videotext NCP
Living Videotext NCP More (outlines, windows, & tree charts) 149
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) Basic Interpreter 3.0 62
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239 Miles Computing NCP
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239 Miles Computing NCP Mac the Ripper Vol. 3 (req. Paint program) 27
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239 Miles Computing NCP Mac the Ripper Vol. 3 (req. Paint program) 27 Orchestra of Fonts Vol. 4 (30 different fonts) 27
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239 Miles Computing NCP Mac the Ripper Vol. 3 (req. Paint program) 27 Orchestra of Fonts Vol. 4 (30 different fonts) 27 Peoples, Places & Things Vol. 5 27
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239 Miles Computing NCP Mac the Ripper Vol. 3 (req. Paint program) 27 Orchestra of Fonts Vol. 4 (30 different fonts) 27 Peoples, Places & Things Vol. 5 27 Mindscape NCP
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239 Miles Computing NCP Mac the Ripper Vol. 3 (req. Paint program) 27 Orchestra of Fonts Vol. 4 (30 different fonts) 27 Peoples, Places & Things Vol. 5 27 Mindscape NCP The Perfect Score: SAT (CP) 47
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239 Miles Computing NCP Mac the Ripper Vol. 3 (req. Paint program) 27 Orchestra of Fonts Vol. 4 (30 different fonts) 27 Peoples, Places & Things Vol. 5 27 Mindscape NCP The Perfect Score: SAT (CP) 47 ComicWorks (create your own comics) 47
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239 Miles Computing NCP Mac the Ripper Vol. 3 (req. Paint program) 27 Orchestra of Fonts Vol. 4 (30 different fonts) 27 Peoples, Places & Things Vol. 5 27 Mindscape NCP The Perfect Score: SAT (CP) 47
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239 Miles Computing NCP Mac the Ripper Vol. 3 (req. Paint program) 27 Orchestra of Fonts Vol. 4 (30 different fonts) 27 Peoples, Places & Things Vol. 5 27 Mindscape NCP The Perfect Score: SAT (CP) 47 ComicWorks (create your own comics) 47 GraphicWorks 1.1 (newsletters) 87 Monogram NCP Dollars & Sense (home, small business) 81
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239 Miles Computing NCP Mac the Ripper Vol. 3 (req. Paint program) 27 Orchestra of Fonts Vol. 4 (30 different fonts) 27 Peoples, Places & Things Vol. 5 27 Mindscape NCP The Perfect Score: SAT (CP) 47 ComicWorks (create your own comics) 47 GraphicWorks 1.1 (newsletters) 87 Monogram NCP Dollars & Sense (home, small business) 81 Odesta NCP
Living Videotext NCP More (outlines, windows, & tree charts) 149 Lundeen & Associates NCP WorksPlus Spell 1.1 49 MacroMind NCP VideoWorks II (animation tool) 119 MacroPac International NCP 101 Macros for Excel 45 Magnum CP The Slide Show Magician 1.3 35 Micro Analyst NCP Mac Zap (recover crashed hard disks) 36 Microsoft NCP Flight Simulator (the Mac takes flight, CP) 32 Basic Interpreter 3.0 62 Chart 1.02 (42 chart styles, CP) 72 Multiplan 1.1 or File 1.05 110 Basic Compiler 1.0 119 Fortran 2.2 (compiler) 169 Works 1.1 (integrated tool) 185 Excel 1.04 (power spreadsheet) 224 Word 3.01 (word processor) 239 Miles Computing NCP Mac the Ripper Vol. 3 (req. Paint program) 27 Orchestra of Fonts Vol. 4 (30 different fonts) 27 Peoples, Places & Things Vol. 5 27 Mindscape NCP The Perfect Score: SAT (CP) 47 ComicWorks (create your own comics) 47 GraphicWorks 1.1 (newsletters) 87 Monogram NCP Dollars & Sense (home, small business) 81

Announcing: Fly by Night.

Order by 8:00 PM. In your hands the next day.

MacConnection and Airborne Express have cleared your orders for immediate takeoff.

Place your order by 8:00 PM EST, it'll be on a plane that night, and in your hands the next day.

When you order, we'll even tell you what time Airborne plans to deliver in your area.

In most cases, they'll make it by noon. Even backorders will ship Airborne!

For details see the terms section on our product pages.

MacConnection

14 MILL STREET, MARLOW, NH 03456 1-800/Mac&Lisa or 603/446-7711

©Copyright 1987 PC Connection, Inc. MacConnection is a division and trademark of PC Connection, Inc., Marlow, NH.

ust three dollars.*

PBI Software CP	
Strategic Conquest (multi-user)	35.
Primera Software CP	
Smash Hit Racquetball (top-rated!)	15.
Psion CP	
Psion Chess (3D and multi-lingual)	31.
Sierra On-Line CP	
Leisure Suit Larry	24.
King's Quest I, II or II	
Space Quest	30.
Silicon Beach Software	
Airborne! (CP, the classic!)	20.
Enchanted Scepters (CP, over 200 scenes)	
Dark Castle (NCP, arcade action)	
World Builder (NCP, program creator)	41.
Simon & Schuster CP	
Star Trek—The Kobayashi Adventure	24.
Sir-Tech CP	-715
Mac Wizardry (high-rated fantasy)	35.
SPHERE, Inc NCP	
Tellstar II (No. & So. hemispheres, req. 512k)	
GATO or Orbiter	26.
XOR NCP	
NFL Challenge (be the coach!)	65.
HARDWARE	
CIACIDAVACIC	

Manufacturer's minimum limited warranty period is listed after each company name. Some products in their line may have longer warranty periods. NOTE: Some hardware items are available in

either platinum or beige color. Please specify.

20 Megabyte SCSI Hard Drive 529. Apricorn ... 1 year ApriCord Mac (for Mac 512k or Mac Plus) 75. AST Research ... 6 months AST TurboScan (300 dpi scanner) 1389. Curtis Manufacturing ... lifetime

Sapphire (3 outlets; EMI/RFI filtered) 47.

Ruby (6 outlets; EMI/RFI filtered; 6 ft cord) 55.

Dove Computer ... 90 days MacSnap 524 (512k to 1 Meg) 139. MacSnap 4S (1 Meg to 4 Meg) 969. Ergotron ... 1 year Mouse Cleaner 360° 15.
 Mouse Clearler 300
 13.

 MacTilt or MacTilt SE
 69.

 MacTilt (for large monitor)
 89.

 MacBuffer 512k
 329.
 MacBuffer 1024k..... 429. Farallon Computing ... 1 year PhoneNET PLUS (DB-9 or DIN-8) 45. Hayes ... 2 years Smartcom II (communications software) . . 88. Smartmodem 1200 299. Smartmodem 2400 449.

Kensington ... 1 year
Appletalk Cable Clips or Connectors. . each 1.

Mouseway (mouse tracking pad) 8.

Mouse Pocket (for your idle mouse) 8.

Mac Plus/Mac SE System Saver Cover 9. Imagewriter II Dust Cover 9.

Mouse Cleaning Kit w/Mouse Pocket 17.

Disk Case (holds 36 Mac disks) 19.

MacConnection Hardware Special

through December 31, 1987

I/O DESIGN MACLUGGAGE Macinware SE

Transport your Mac in style with I/O Design's Macinware SE carrying case. Sturdy, well-padded design for your entire system. Includes internal compartments for your keyboard, hard drive, modem, mouse, manual and cords. Available in navy blue.

Imageware II

Same rugged construction as the Macinware SE case—high density foam and 1000 denure nylon Cordura. Includes a pocket for a small supply of computer paper. Available

Macinware SE-Imageware II Special Buy both and save only \$105.

Disk Drive Cleaning Kit
Tilt/Swivel
Universal Copy Stand 23.
Polarizing Filter (Mac Plus or Mac SE) 33.
Surge Suppressor
Apple Security Kit
Printer Muffler (80 column)
Printer Muffler (132 column) 51.
Printer Muffler Stand (80 or 132 column) 25.
Control Center 63.
Control Center
System Saver Mac
Turbo Mouse (for the MacPlus & SE) 83.
Koala Technologies 90 days
MacVision (digitizer, includes MoreVision) 175.
Kraft 1 year
3 Button QuickStick special
Migent 1 year
Pocket Modem (ext. 300/1200 baud) 169.
Mirror Technologies 1 year
Magnum 800 External Drive 209.
Magnum Tape 20 Backup 899.
Magnum Tape 40 Backup 1079.
MagNet 30x (w/cable & print spoolers) 799.
MagNet 40x (w/cable & print spoolers) 1079.
MagNet 40/40 (40 Meg, 40 Meg tape) 2139.
Nutmeg Systems 1 year
Nutmeg FPD 15" Monitor 1395.
Nutmeg 19" Monitor
Nuvotech 1 year
EasyNet (Apple Talk network connector) 28.
Personal Computer Peripherals 2 years
Optional built-in 1200 bps modems available.
MacBottom HD 21 Meg (SCSI) 769.
MacBottom HD 32 Meg (SCSI) 899.
MacBottom HD 45 Meg (SCSI)
SoftStyle 90 days
MacEnhancer (for plotters to printers) 175.
Summagraphics 90 days
MacTablet 12" x 12"
Systems Control 2 years
MacGard (surge protection) 55.
Thunderware 90 days
ThunderScan 4.0 with PowerPort 199.

DISKS

Sony 31/2" DS/DD Disks (box of 10)	\$18.
Fuji 31/2" DS/DD Disks (box of 10)	19.
MAXELL 31/2" DS/DD Disks (box of 10)	20.
Verbatim 31/2" DS/DD Disks (box of 10)	20.
3M 31/2" DS/DD Disks (box of 10)	20.

INFORMATION SERVICES

CompuServe Information Service	24
Dow Jones News/Retrieval Membership Kit	24

ACCESSORIES

Clean Image Ribbon Co.

Clean Image Ribbon Kit
Computer Coverup
Imagewriter II Cover 8.
Mac Plus & Keyboard (two covers) 10.
I/O Design
Imageware II (Imagewriter II carry case) 45.
Macinware Plus (Mac Plus carry case) 65.
Macinware SE (Mac SE carry case) 75.
Macinware SE-Imageware II special
Kalmar Designs
Teakwood Roll-top Case (holds 45 disks) 14.
Teakwood Roll-top Case (holds 90 disks) 20.
Teakwood Roll-top Case (holds 135 disks) 28.
Magnum
Mouse Mover (let your mouse ride!) 14.
Moustrak
Moustrak Pad (standard 7" x 9") 8.
Moustrak Pad (large 9" x 11") 9.
Sensible Softworks
Quality "MacAttire" nylon dust covers 7-17.
High Trek Imagewriter II carry case 49.
High Trek Mac Plus or SE carry case call

OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders usually shipped 1st Class Mail.
 Allow 1 week for personal and company checks to clear.
- UPS Next-Day-Air available.
- COD max. \$1000. Cash or certified check.
- 120 day limited warranty on all products.
- To order, call us anytime Monday thru Friday 9:00 to 9:00, or Saturday 9:00 to 5:30. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30.

SHIPPING*

Note: Accounts on net terms pay actual shipping. Continental US: Barring massive computer failures and other natural or unnatural catastrophes, all non-C.O.D. orders phoned into MacConnection by 8 PM EST will ship Airborne the same night for next day delivery, except for those within UPS Ground Zone 1 (which is also an overnight service). The total freight charge on any order placed with MacConnection is now \$3. Backorders will also ship Airborne overnight at no additional charge. Some areas require an additional day delivery. Hawali, Alaska and Outside Continental US: Call 603/446-7711 for information.

overnight delivery for j

Olduvai Software NCP	Diskrit (backup & restore utility) \$45.	Activision CP	
DA-Switcher (unlimited desk accessories) \$26.	Network Diskfit (automatic back up) 205.	Tass Times in Tonetown \$	21
Post ART (clip art, 3 disk set)	Sentinel (encryption) 85.	Championship Star League Baseball	
Icon-It! (create custom icon bars) 41.	SuperLaserSpool 85.	Shanghai (Mah Jongg strategy)	24
OWL International NCP	Multi-User SuperLaserSpool 205.	Portal (sci-fi novel)	30
Guide (hypertext, free-form info) 77.	Survivor Software NCP	Addison-Wesley CP	
Guide Envelope System 99.	MacMoney (financial planner) 41.	Puppy Love (your dog will love it!)	19
Palantir CP	Symmetry NCP	Avalon Hill CP	
MathFlash or WordPlay 26.	Acta 2.0 (outline/writing desk accessory) 37.	MacPro Football (req. 512k)	29
MacType (typing instruction) 32.	PictureBase 1.2 (clip art manager, 512k) 59.	MacPro Football 85 Team or Season	
inTalk (communication to emulation, NCP) 99.	Think Educational CP	Blue Chip CP	
PBI Software NCP	MacEdge II or Mind Over Mac 28.	Millionaire, Tycoon, Baron or Squire	35
HFS Locater (DA organizer for HFS) 26.	THINK Technologies NCP	Broderbund Software CP	
HD Backup (supports MFS, HFS) 28.	HFS Navigator (search for buried files) 35.	Lode Runner (over 150 levels)	24
Personal Computer Peripherals NCP	Laserspeed (LaserWriter utility) 55.	Ultima III (fantasy adventure)	
HFS Backup	Lightspeed Pascal	Ancient Art of War (military strategy)	
ProVUE Development NCP	Lightspeed C (top-rated C Compiler) 95.	Toy Shop (create working models)	31
OverVUE 2.0 (power-packed database) 149.	InBox Starter Kit (CP) 215.	Bullseye CP	
Rubicon Publishing CP	InBox Personal Connection (Mac & PC) call	Ferrari Grand Prix (Formula One racing) :	33
Dinner At Eight-Silver Palate Bundle 51.	T/Maker NCP	Fokker TriPlane Flight Simulator	
Satori NCP	ClickArt Personal Graphics, Effects,	Electronic Arts CP	-,-
BulkMailer 3.0 (mailing lists) 82.	Publications, Letters Vol. 1 or 2, Holidays,	Ogre (tank simulation)	20
BulkMailer Plus (up to 90,000 names) 199.	Business Image each 28.	Archon, Skyfox, Seven Cities of Gold,	
Legal Billing (attorneys to accountants) 379.	Bombay, Plymouth, or Seville Laser font 45.	Dr J vs Larry Bird, Patton-vs-Rommel,	
Legal Billing II (full trust accounting) 569.	Write Now (word processor)	Pinball Construction Set each	27
Project Billing (architects to engineers) 442.	TML Systems NCP	Chessmaster 2000	
Silicon Beach Software NCP	TML Source Code Library	Epyx CP	
Silicon Press (printer utility, 512k) 41.	TML Pascal (compiler, req. 512k) 59.	Rogue (strategy dungeon classic!)	15
	TrueBasic NCP	Sub Battle Simulator (NCP)	
SuperPaint (advanced graphics program) 79. Simon & Schuster NCP	True BASIC (fast, flexible, & portable) 59.	Winter Games (Olympic events)	
Mac Art Department (req. Paint program) 24.	Algebra I or II, Pre-calculus, Trigonometry,	Hayden Software CP	24
		Sargon III (9 levels of chess)	20
Typing Tutor IV (new & improved) 35.	3D Graphics, Discrete Math, Probability,	Infinity Coffware CD	23
SoftStyle NCP	Calculus, Arithmetic, & MacFunction each 35.	Infinity Software CP	20
Epstart (Epson printer driver)	TrueSTAT (statistics)	Go (4000-year-old strategy game)	
Printworks (print faster & in color) 46.	Runtime (create stand-alone applications) 59.	Grand Slam (tennis, req. 512k)	21
Laserstart (Hewlett-Packard Laserjet) 58.	Unicorn CP	Infocom CP	10
Softview NCP	Animal Kingdom (ages 6-12)	Hitchhiker's Guide to the Galaxy	18
Macinuse (time-use manager) 42.	Decimal Dungeon (math, ages 9 and up) 27.	Leather Goddesses, Trinity, Moonmist,	
Software Discoveries	Fraction Action (arcade style math game) 27.	Ballyhoo, Bureaucracy, Stationfall, Nord & Be	ert
Record Holder Plus (data manager) 45.	Mac Robots (pre-school program)27.	Lurking Horror, Plundered Hearts,	٠.
Software Supply NCP	Math Wizard (math games, ages 5-10) 27.	Hollywood Hyjinx (standard) each	24
Suitcase (font and DA utility)	Read-A-Rama (reading, ages 5-8) 32.	Zork Trilogy	
PowerStation (alternative to Finder) 38.	William & Macias NCP	Invisiclues Hint Booklets (please specify)	6
Software Ventures NCP	myDiskLabeler (design & print labels) 24.	MacroMind CP	
Microphone 1.1 (includes Glue™) 119.	myDiskLabeler w/Color (req. Imagewriter II) 32.	Maze Wars+ (play via modem or network)	31
Solutions, Inc NCP	myDiskLabeler w/LaserWriter option 35.	Miles Computing CP	
SmartScrap & The Clipper 40.	Working Software NCP	Harrier Strike Mission or Quintette	
Glue (creates "print to disk" capability) 40.	Lookup (90,000 word dictionary) 29.	Down Hill Racer (3D ski simulation)	
SuperGlue (total graphic integration) 57.	Findswell (locate documents fast) 32.	Fool's Errand (solve the puzzles)	27
Springboard CP	Spellswell (spelling checker) 42.	Mindscape NCP	
Art a la Mac Vol. 1 or 2 (NCP)	Spellswell Legal or Medical Dictionary 57.	Balance of Power (world politics)	
Early Games or Easy as ABC 28.	PEN PURIS	King of Chicago (req. minimum 512E)	30
Certificate Maker (requires 512k)	GAMES	Shadowgate (castle adventure)	30
Certificate Library Vol. 1 19.		Uninvited or Deja Vu	
SuperMac Software NCP	Accolade CP	Olduvai Software NCP	
SuperSpool 3.4	Hardball (baseball simulation) special	Maze Survival (action game)	21

1-800/Mac&Lisa

7700



MacConnection

MacConnection, 14 Mill Street, Marlow, NH 03456 800/622-5472 603/446-7711

Copyright 1987 PC Connection, Inc. MacConnection is a division of PC Connection, Inc. MacConnection is a trademark of PC Connection, Inc.

All items subject to availability. Prices subject to change without notice.

Reviews

Hello, PhoneNet Calling

PhoneNet System

Network-wiring system and diagnostic software. Pros: Inexpensive; straightforward installation; unique troubleshooting features. Cons: StarController requires manager Mac in close proximity; TrafficWatch requires dedicated Mac as monitor. List price: StarController \$1695 (Wiring Kit \$95 extra); Passive Star Wiring Kit \$95; PhoneNet Plus Connectors \$59.95 each; TrafficWatch \$195; Testing Utilities \$29. Requires: 512K. Copy protection: None.

Writer are only the beginning of AppleTalk networking. Business users need to expand and link together their networks in a logical fashion for greater efficiency. Farallon Computing's PhoneNet goes beyond the simple bus structure of Apple's connector system, offering network components that make expansion easier. And PhoneNet's use of existing phone wiring not only simplifies AppleTalk installation—it saves you money.

Two PhoneNet devices, the Passive Star Wiring Kit and the StarController, can create large star-topology networks ranging in size from 4000 feet to 36,000 feet of cable that may extend over many offices, floors, or buildings.

Seeing Stars

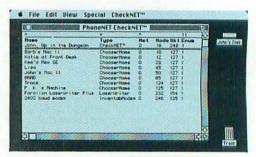
The StarController consists of 12 isolated ports, one for each leg of an active star and one separate port for network management. The StarController can handle 3000 feet of cable per leg, for a total of 36,000 feet; each leg can consist of multiple devices or another active star. Assigning one StarController to each floor of a building and then chaining these stars or connecting them via another master StarController simplifies configuring an entire building for an AppleTalk network.

The StarController management bus operates independently of AppleTalk, enabling the manager to isolate problems in each leg of the star, even if the management Mac is disconnected from the network. The StarCommand software allows the manager to isolate one or more legs from the StarController, and attach names and comments to each port. This eliminates the need to physically inspect every machine to locate problems or monitor the network. The manager's Mac must be located within 200 feet of a StarController, but Farallon plans to remedy this inconvenience by offering a modular attachment for remote access via a modem or for local testing with a portable computer.

Smaller offices may not need the capabilities of the StarController, and so instead may choose a more limited star topology with the Passive Star Wiring Kit. This kit includes a standard telephone-type punchdown block for making network connections in a utility closet and supports up to six separate legs that are not isolated from each other. The kit can support a total network length of about 4000 feet and is more flexible for wiring offices than a simple daisy-chain network of 3000 feet.

Making the Connection

The PhoneNet Plus Connectors are designed to replace Apple's own AppleTalk connectors, but they can also connect to telephone cabling rather than to Apple's shielded cabling. The connector design allows internode distances of 3000 feet, whereas Apple's cabling supports lengths of only 1000 feet. Connecting to telephone cables means PhoneNet Plus Connectors can use existing building wiring to create an AppleTalk network, without compromising the normal telephone service on the same cables.



CheckNet

CheckNet lists all users, including node names and numbers.



Watching Traffic

Here, TrafficWatch displays network traffic in "bar graph" form.



Who's Out There?

Farallon's *TrafficWatch* and *Testing Utilities* are designed to assist network managers in diagnosing network problems.

When networks become sluggish or nodes cannot communicate, *TrafficWatch* is a handy tool for isolating the problem. *TrafficWatch* provides the network manager with information on network traffic between nodes, as well as the number and type of errors occurring on the net (see "Watching Traffic"). Network traffic can be displayed dynamically as a series of bar graphs or presented in spreadsheet form.

TrafficWatch can store traffic data at arbitrary intervals for further analysis within Excel. Farallon includes two Excel macros designed to simplify the task of collating the network traffic data. These macros can reformat the original TrafficWatch data, produce graphs of traffic for each user and the entire network, and provide a breakdown of network errors.

TrafficWatch deactivates AppleTalk. So while TrafficWatch is in use, the monitoring Mac is not a recognizable node on the AppleTalk network and cannot use AppleShare, TOPS, or MacServe. This package is also incompatible with a debugger. These limitations seem a small price to pay, though, for the valuable information provided by TrafficWatch.

The *Testing Utilities* disk includes CheckNet, a simple desk accessory that provides information on other active network users and printers. Since AppleTalk does not automatically register a name with a node, the utilities disk also includes an Init resource called RegisterName, which allows users to choose a name for their Mac that will register on the network every time they boot their Mac. CheckNet lists these names to show all current users on the net; this information can then be used to determine if the proper connections have been established (see "CheckNet").

Working within the phone system,. PhoneNet gives corporate AppleTalk users effective tools for organizing networks as work groups, as well as for linking these work groups together into either departmentwide or corporatewide networks.

—Dave Kosiur

See Where to Buy for product details.

A (Re)Touch of Gray

ImageStudio 0.6 (prerelease)

Gray-scale editor for retouching scanned images. Pros: Versatile set of tools and effects for enhancing images. Cons: Files require a good deal of memory. List price: Version 1.0, \$495. Requires: Mac Plus (Mac II recommended for viewing gray-scale information). Copy protection: None.

Desktop publishing is changing faster than you can say Johannes Gensfleisch Gutenberg. With the advent of high-resolution input devices from companies like Abaton and Microtek, Mac publishers can produce digitized versions of photos, which can be placed into a variety of page-layout programs and printed on the LaserWriter or a PostScript-compatible phototypesetter. Images recorded by many of today's scanners include the gray-scale information necessary to approximate the range of grays in a continuous-tone photograph.

Although scanner software offers some control over brightness and contrast, as well as some rudimentary image-editing tools, it's inadequate for extensive touchup work. But salvation is here: Letraset's ImageStudio (formerly code-named The Realist) gives publishers an extensive array of tools for retouching scanned images before placing them in page-layout programs. In addition to touch-up tools, the program provides a number of halftone printing effects in the form of adjustable dot and line screens.

Digital Darkroom

ImageStudio's collection of tools and special effects does everything from smooth the jaggies to improve the contrast in selected areas. The program can be used for simple tasks like cleaning up unsightly glitches in a scanned picture, or for more elaborate alterations, such as removing a deposed leader from the company newsletter's group portrait. And although it's not intended to be a stand-alone drawing program, ImageStudio can be used to create freehand drawings as well. I spent hours experimenting with numerous pens, brushes, and effects, printing out several paper trays' worth of experiments on the LaserWriter.

ImageStudio's layout is clean and straightforward. The program offers four movable palettes. The Tool Palette contains two selection tools (a lasso and a rectangle), six drawing tools, a zoom tool, and a "grabber" to slide the drawing area around the page. The Pen Palette offers a selection of eight pen tips (drawing tool shapes) and a space for custom tips you de-

sign. The Graymap Editor palette displays one slider for brightness and another for contrast, as well as the *graymap box*, which sets the distribution of shades in an image. Finally, the Shade Palette shows a continuum of 17 grays; double-click a shade to access *ImageStudio*'s full range of 65 shades.

The basic procedure for editing an image is this: first, you load a digitized photo into ImageStudio, which maps the gravscale information for each dot into one of ImageStudio's 65 grays. The program accepts MacPaint, ThunderScan, FOTO, and TIFF files, although TIFF (Tagged-Image File Format) may differ from one scanner to another. (According to a Letraset representative, ImageStudio reads images from most 300-dpi scanners, including those from Abaton, Thunderware, and Microtek.) Once the picture is in ImageStudio's drawing window, you can crop it, rotate it, change the brightness and contrast of all or part of the image, touch up flaws, or otherwise edit the image. ImageStudio lets vou open several views of an image at once, in scales ranging from 25 percent to 1600 percent of its original size. In most cases, you'll zoom in on a section and retouch the picture in a magnified view.

Some of the drawing tools may look familiar to Mac artists, but *ImageStudio*'s tools operate somewhat differently from those of Macintosh paint programs. The brush, for example, blurs the edges of each





If you carefully compare these two images, you'll note some changes produced with ImageStudio. In the right-hand image, two trees were removed

to provide a better view of the row of houses. The portions of the houses behind the departed trees were drawn with several pens, and the edges



were smoothed with the water drop. In addition, a sky and cloud were added and the image was darkened slightly and cropped. stroke, as if ink or paint were spreading out. The pencil draws a hard-edged, opaque line in the selected shade, the charcoal lays down a progressively darker line as you rub an area, and the rubber stamp draws multishade lines with custom shapes and patterns. Two unique tools, the water drop and the finger, blend or smear rough edges, smoothing the transition from one shade to the next and eliminating jagged lines (*anti-aliasing* in computergraphics terminology).

Custom Tools

All of ImageStudio's tools can be customized. Double-clicking on a tool brings up a Preferences dialog box that offers options such as Pressure (how many strokes are required to darken an area), drawing from dark to light (this option causes a brush stroke to "fade out"), and repeat pattern (this option allows you to create effects such as a broken line rather than a continuous one). The Preference dialog boxes enable retouchers to create a set of custom tools to suit individual needs. For example, the charcoal can be made into a piece of chalk that draws in white instead of black; the brush can be made to paint only on the background, leaving foreground objects untouched; or the paint bucket can be instructed to spill a smooth gradation from one shade to another rather than a solid shade.

ImageStudio not only lets you customize the existing tools, but allows you to create original tools as well. Surround a pattern with the selection rectangle, choose a command, and the tool is inserted in the Custom menu, ready to be retrieved.

Only a few of *ImageStudio*'s many features are mentioned here. The more I used the program, the more I was impressed with the programmers' attention to detail. For example, *ImageStudio* lets you click on a pattern in the drawing and "pick it up," making it instantly available for shading adjacent areas. Another example: a lassoed selection can be edited; if you slip when surrounding a complex shape, you can alter the blinking lasso line rather than start over.

Once you've retouched an image, you can paste it into a page-layout program that accepts TIFF, *MacPaint*, or EPS (Encapsulated PostScript) files. Unfortunately, files saved in TIFF or EPS take up quite a bit of



memory; this is not a function of Image-Studio, but results from the routines TIFF and EPS use to store files. For example, a file that occupied 94.5K in ImageStudio format took up 405.5K in TIFF and a whopping 834K in EPS. A file of this size could be refused by the LaserWriter as well as by page-layout software. (A Letraset spokesperson suggests scanning large pictures at less than the full 300-dpi resolution; 150 dpi should be sufficient for most printing applications.) I encountered no problems pasting an image in both TIFF and EPS format into ReadySetGo 4.0 and printing the file. (This is not surprising, since Letraset distributes both programs and had a chance to work on compatibility.) I was able to paste EPS and TIFF files into Page-Maker 2.0, but ran into problems when I tried to print the files on the LaserWriter. If you plan to use *ImageStudio* with PageMaker, I'd suggest checking with Letraset before making your purchase-I can't make a definitive statement on printing problems based on a prerelease version of ImageStudio.

Other than oversized files, the only notable problem I ran into was sluggish behavior on the part of some of the drawing tools. This could prove annoying when drawing freehand, but shouldn't be a bother during the generally slow and meticulous work of touching up a photo. Finally, although *ImageStudio* works on a Mac Plus, I'd suggest running on a Mac II for best results. A Plus can display only simulated gray scale—pixels are either black or white, and must be arranged in patterns to represent shades of gray. On a Mac II equipped with a graphics card, however,

each pixel can have a shade of gray, producing a much better representation of the final printed output. Retouchers who use *ImageStudio* on a Mac Plus will have to resort to printing numerous proofs on the LaserWriter to see the results of their work accurately.

Any Mac publisher who uses scanned photos should take a look at *ImageStudio*. While retouching digitized photos may not be as noble a pursuit as creating original artwork, it's nonetheless an important aspect of producing professional-looking publications. *ImageStudio*, by enabling artists to enhance scanned images, adds another layer of sophistication to the art of desktop publishing.—*Erfert Nielson*, *Dithering Idiot*

See Where to Buy for product details.

Desktop Publishing the Hard Way

MacPublisher III 3.0

Desktop publishing program. Pros: Flexible and precise page-layout tools; capable graphics features; color printing. Cons: Unwieldy text formatting and editing; lacks style sheets and batch pagination. List price: Version 3.1 \$295. Requires: 512K. Copy protection: None.

Mac Pub

Given *MacPublisher III*'s wealth of sophisticated features, Letra-Set's sudden decision last summer

to drop the program in favor of *Ready-SetGo* might, on first glance, be puzzling. But despite goodies like text and graphics rotation, gray scales, and support for full-color printing and PostScript files, *Mac-Publisher III's* design suffers from major inconsistencies and limitations. While you can lay out complex pages with precision, and many of the program's advanced features are easy to use, the *MacPublisher III* turns some basic chores into exercises in exasperation, especially when it comes to text formatting.

Macware Reviews

Layout Strengths

As with most other programs of its ilk, you build a page in MacPublisher III by defining component blocks for text and graphics. You place and resize blocks with the mouse, or by typing coordinates into an associated spec sheet. The layout tools are flexible, and snap-to positioning and an automatic sizing feature (a text block can be set to adjust its bottom border as you add or remove text) make accurate work relatively painless. In another nod to efficiency, MacPublisher III lets you designate text or graphics as repeating elements such as headers or midpage banners that appear throughout a document, and lets you automatically lay them out on mirrorimage left and right pages.

A *MacPublisher III* main document, called an *issue*, contains only the layout of the various empty blocks you've placed. The text and graphics themselves are stored in separate disk files linked to the issue, making it easy to use the same layout as a template for future documents (see "Layout Screen").

Problems, Problems

MacPublisher III is replete with sophisticated typesetting controls, but because the program mangles some basic text-editing functions, you may find it hard to appreciate the advanced features.

One of *MacPublisher III's* most surprising defects is its inability to handle more than one font or font size in a line of text, or even within one text block. You can work around this limitation by creating a block for each font change, but what would ordinarily have taken a few quick swipes of the mouse may now require many minutes of planning and screen manipulation. And this setup will return to haunt you if make any changes later.

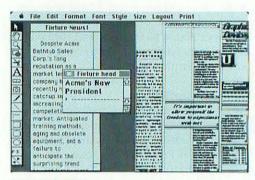
MacPublisher III has separate styleediting and text-editing modes for changing text; switching between the two modes requires a keyboard-mouse command that isn't listed on the menus. In the styleediting mode, you see text styles (italics, boldface, and so on), discretionary hyphens, and the position of tabbed text, but all of these are invisible in the text-edit mode. However, it's difficult to accurately position the cursor for cut-copy-paste operations and for text insertion from the keyboard while in the style-editing mode. Despite these differences, you can change styles or edit the text itself in either mode. In both modes, *MacPublisher III* inserts invisible-but-editable style characters at the beginning and end of each style change. While you can't see these characters, you can erase them. When making any changes near a style character, it's all too easy to inadvertantly remove italics from an emphasized word or add underlining to an entire passage.

While MacPublisber III provides good character formatting control, sophisticated kerning and leading features, it's gravely inadequate for paragraph formatting. Not only are reusable style sheets or paragraph format tags missing, you don't even get rulers for defining tabs and indents.

Speaking of tabs, MacPublisher III's implementation of tab stops, which are permanently set at every four spaces, severely limits their usefulness. For all practical purposes you can use only one tab per line-otherwise, text piles up in an unintelligible heap at the end of the line. To further complicate the matter, these preset tabs do not appear in a ruler line. Thus even in the style-edit mode, where you see the results of your tabbing, the difficulty of positioning the cursor makes it hard to line up material. With all of these constraints, it's almost impossible to coax, say, a name and address list into a simple, temporary columnar format within a single text block.

If you think you might get around these formidable formatting limitations by

preparing the text with another program, think again. Although *MacPublisher III* retains text styles when it imports *Word* and *MacWrite* files, it strips out their tabs and font changes, including point size. Text files, by the way, are limited to 32K.



Layout Screen

In this MacPublisher III layout screen the two individual short text files on the left have already been placed in the page layout (leftmost column).

The Bright(er) Side

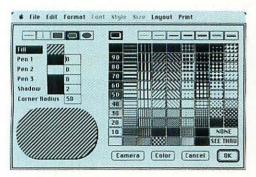
Though *MacPublisher III* lacks a batch pagination feature, you can flow text automatically from one block to carryover blocks. You can only establish links between these carryovers within the original text file. Unlike *XPress* or *Ragtime*, *MacPublisher III* can't link or disconnect any two blocks whenever you like. Instead, to



make text flow into a different location in your document, you must move the carryover block.

Currently, MacPublisher III is unique in its ability to rotate text, an easy-to-use touch that newsletter publishers and ad designers will appreciate. Still, all you see of the rotation on the screen is a rectangular outline, and you can't be sure of how the text will look on the printed page.

If MacPublisher III is cumbersome at manipulating text, its graphics capabilities are powerful and simple to use. You can draw lines, boxes, and circles, and you get an extensive palette of fill patterns (see "Graphics Palette"). You can place, crop, scale, or rotate picture files from other applications in bit-mapped, object-oriented, and Encapsulated PostScript formats. The program even supports color on the Mac II, prints in color on the ImageWriter II, and makes color separations on the LaserWriter.



Graphics Palette

MacPublisher III boasts an extensive palette of fill patterns, gray scale choices, and colors. The palette also gives you independent control of three separate borders around boxes and circles.

MacPublisher III can theoretically handle just about any page-layout task, but if your project calls for frequent text-format changes, the eventual results may not be worth the strain. The program is probably best suited for short newsletters with lots of graphics.

MacPublisher III follows real-life page layout too closely. If your needs for desktop publishing software cover a broader range, and you don't require MacPublisher III's unique color or rotating features immediately, you should probably look elsewhere or wait for the inevitable upgrade. -Steve Cummings

See Where to Buy for product details.

Vocab Rehab

Smart Words

Vocabulary-training program. Pros: Innovative; accommodates diverse learning styles; makes vocabulary drills interesting. Cons: Limited to 600 words; no option for adding new word lists. List price: College Prep Vocabulary \$49.95; Essential Business Vocabulary \$49.95; additional data disk \$19.95. Requires: 512K. Copy protection: None.

An extensive vocabulary is an allaround useful tool. But acquiring one can be as tedious as learning

Latin grammar. Smart Words, an interactive vocabulary-drill system from Addison-Wesley, incorporates a variety of teaching techniques designed to parry the boredom of word learning and to accommodate diverse learning needs.

Words on the Menu

Smart Words comes in two versions, each with its own vocabulary. The College Prep version is geared toward students who must brave the Scholastic Aptitude Test (SAT) to apply for college admission. The Essential Business version targets the college graduate who is entering the professional job market for the first time. Aside from the different vocabulary sets, the two versions are programmed identically.

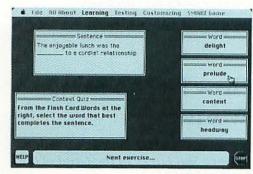
The heart of the Smart Words program is the Learning Words menu that accesses the basic vocabulary training exercises. Learning Words presents a group of ten words on Flash Cards. Each word has six drill options that allow you to select a Definition, suggested Pronunciation, Background (origin), Context (sample sentence), Synonym, or Antonym.

When you've examined all ten words to your satisfaction, Smart Words quizzes you with a series of carefully designed multiple-choice questions in a variety of formats. Rather than penalize you for wrong answers, Smart Words offers a review hint if you choose two incorrect answers to any question (see "Pop Quiz"). Because some people learn better under pressure, the program also includes a less-forgiving Word Testing menu option that times responses, forbids retakes, and ruthlessly tallies each mistake.

When you start by accessing the Learning Words or the Word Testing menu, a group of ten words is randomly chosen; you can't specify which group of words you want to work on. With each program version, you can gain more control over your personal curriculum by using the Customized Learning menu. You simply browse through the 300-word list and select the ones you want to study in detail.

Smart Words also features an innovative Imagine option. It is often easier to remember the meaning of a word if you can associate it with an image. The Imagine option suggests a visual image for the word you're trying to learn (see "Visual Mapping"); but if you prefer, you can create your own image, thereby attaching personal associations to a word and incorporating it more naturally into your vocabulary.

The final menu accesses Smart Game, a maze game in which you use word "keys"



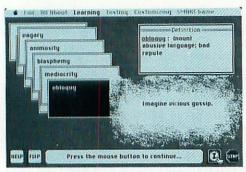
Pop Quiz

A series of multiple-choice questions provides you with immediate review at the end of each learning session.

to unlock "doors" to different levels of a complex maze. While this simple game is no Dark Castle, it does provide an entertaining facade for serious vocabulary work.

Peccadillos

Smart Words' biggest peccadillo (flaw according to the program) is its limited word list. When compared to the 3000 words covered by Barron's SAT prep book, the Smart Words College Prep Vocabulary of 300 words seems inadequate. The publisher, however, is currently considering a revision or additional supplementary data disks for release in early 1988.



Visual Mapping

The Imagine option suggests a way to visualize a word's meaning.

Barron's also scores higher than Smart Words at providing etymological information to help students learn meanings of words by breaking them down into roots, prefixes, and suffixes.

But *Smart Words* scores bonus points when it comes to motivation; it's a lot more interesting and fun to learn new words with this imaginative interactive program. *–George and Susan Beekman*

See Where to Buy for product details.

How Not to Meet Women

Leisure Suit Larry in the Land of the Lounge Lizards 1.0

Animated adventure game. Pros: Humbrously animated; tongue-in-cheek "adult" content parodies painful aspects of real life. Cons: Meandering, nonviolent script does not provide the edge other action/adventure games do; game contributes nothing to enlightened male attitudes toward women. List price: \$39.95.

Requires: 512K. Copy protection: Key disk.

Leisure Suit Larry in the Land of the Lounge Lizards, from Sierra On-Line, is an animated adventure game for those tired of zapping and blasting their way through wimpy fantasy kingdoms. The action is set in the American gambling city of Lost Wages; the challenges are divorce, gambling, and middle-age mating. Treacherous, eh? The game has a parental guidance warning and is biased

toward adult males with the courage (and/ or practical experience) to identify with a divorced, amusingly ill-equipped soldier in the war between the sexes. As the game packaging loudly proclaims, "Yeah, Larry's a jerk." What's worse, no matter how well you play the game, he remains a jerk.

Modern Urban Singlehood

The evening starts with the animated figure of Larry standing outside a downscale bar. From the taxi stand outside the bar, Larry is free to visit any of the game's locations in any order. At its best, *Leisure Suit Larry* surprises you with clever animations that make you laugh out loud. At its most boring, the game requires too much time gambling for small change. And at its worst, the game is offensive—not in the way some may feel a film like *Animal House* offends, but in the offensive manner of a man who still calls women "chicks."

The challenge of *Leisure Suit Larry in the Land of the Lounge Lizards* is to discover the specific (and convoluted) sequence of locations and events necessary to reach the final goal. There are fewer puzzle elements than in more-intense adventure games, and more cartoon-like performances—which, however neatly done, render you more of a viewer than a player. The animation runs slowly on a 512K Mac; on a Mac SE, the game is improved by relatively quick, fluid movement.

Adult Adventure?

Larry's idea of an ideal mate is shallow even for a parody. On the reference card supplied with *Leisure Suit Larry*, under Talking to Women it says: "Women can be loads of fun... Women are also fickle. Do not take 'no' for an answer." The card might just as easily have said, "Women can be flexible. Try asking again."

There are many examples of a fifties mentality that are meant to be satirical but just seem lame. That and the overall looseness of the script deny this game the sharp edge found in successful adventure games. And while there are numerous (usually sophomoric) traditional-male laughs, *Leisure Suit Larry in the Land of the Lounge Lizards* could have been funnier and

somewhat more contemporary if Larry encountered (humorously rendered) women of the eighties. If the fun here suffers in comparison with the raunchy and humorous *Leather Goddesses of Phobos* or *Space Quest* games, it is mostly because of the retrograde subject matter. –*Keith McCandless*

See Where to Buy for product details.

Pace Yourself

Personal Training Systems

Audiotape and disk-based tutorials for Excel, PageMaker 2.0, Word 3.0, and Works.

Pros: Well-organized and comprehensive. Cons: Instruction sometimes too slowly paced; purchasing more than one module may be necessary to make full use of program. List price: Excellerate 1.04 \$39.95; LearnWord 3.01, Master-Works 1.1, PageTutor 2.0 \$49.95 each. Requires: 1MB for PageTutor, 512K for all others. Copy protection: None.

For those who've wanted to attend a seminar to learn some of the more complicated software packages for the Mac but have neither the time nor the cash, Personal Training Systems now offers the next best thing. Excellerate, MasterWorks, LearnWord, and PageTutor training series provide comprehensive basic-to-advanced training on Microsoft Excel, Works, Word 3.0 and PageMaker 2.0. The Excellerate series has nine modules, and the others each have three modules. Each module is purchased separately and consists of an audio cassette, a disk, and a command summary card.

Because Excel, Works, Word, and PageMaker are so powerful, most people prefer to first master some basics, then use the programs while they gradually learn the more sophisticated features. Any product that enhances this process is a welcome alternative to the cumbersome documentation that often confuses more than it helps. These well-organized training series provide a hands-on, incremental method of acquiring essential skills.

You begin by inserting the training disk in the internal drive and the appropriate program disk in the external drive and starting the audiotape. Every module con-

tains ten lessons, each previewing what will be learned before guiding you through a working session. Next, general principles are developed from the hands-on experience. Finally, by reading a command summary card, you further commit the command sequences to memory.

The Teaching Modules

Each module takes between one and two hours to complete. But since the training disk contains a separate file for each lesson, it is simple to stop a session in the middle of the module and resume later.

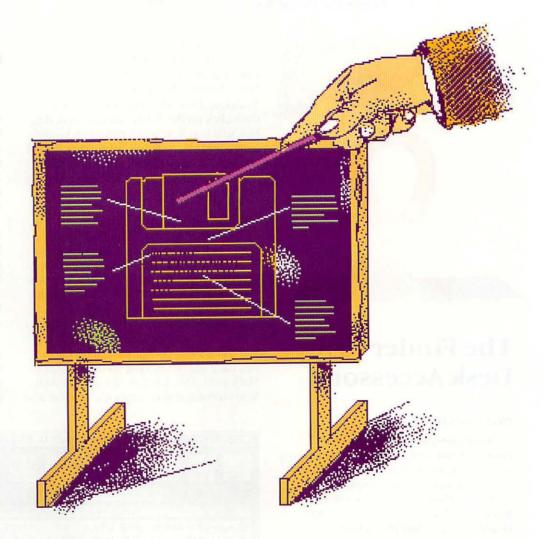
Theoretically, if you expect to use only the basic features of the program, you need only buy the first module of the training series. In some cases this works well; in other cases, it doesn't. For example, Module 1 of *LearnWord* 3.0 teaches you to enter, delete, and move text; print; justify; change font style and size; use tabs; create headers and footers; and check spelling. So by the time you finish this module, you will have the tools to create most documents.

On the other hand, Module 1 of *Page-Tutor* leaves you slightly less prepared for using the program: you learn neither graphics-cropping techniques nor how to delete and insert pages until you get to Module 2.

Excellerate Module 1 is the least self-contained, since it leaves you without the ability to use CLEAR to delete cells, display commas in numbers, delete or insert a row, and copy or move cells. In fact, you'll probably find it hard to create a usable spreadsheet without first going through at least three of the four spreadsheet modules in this series.

A Closer Look at Excellerate

The Excellerate series offers two versions of Module 1. Module 1A is called Fundamental Excel for the First-Time Spreadsheet User and 1B is called Fundamental Excel for the Experienced Spreadsheet User. Each volume teaches the same Excel functions. The only difference is that 1A adds auxiliary clauses that explain spreadsheet terms such as cell, row, and column. The modules are so similar that unless you're absolutely certain that an inexperienced spreadsheet user will never use the module, you might as well purchase 1A.



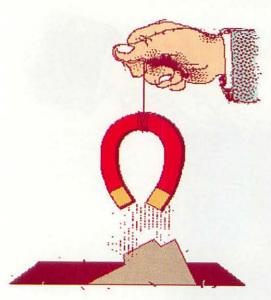
In addition to its spreadsheet application, Excel has database management and graphics capabilities; it also provides a macro function for automatically recording a series of actions, which can later be executed with a couple of keystrokes. Therefore, five of the Excellerate modules cover those functions. They include Module 2, Creating Business Graphics; Module 4, Building and Using Databases; Module 5, Building and Using Macros; and Module 6, Advanced Macro Techniques. Each module is self-contained and complete-and they're perfect for experienced Excel spreadsheet users who want to expand their knowledge in particular areas.

One problem with classroom instruction is that it often caters to the slowest student. In fact, that was my only complaint about the tone of this series—it does sometimes seem intended for a particularly inattentive student with a rather poor memory. As a result, some of the narrative has an unfortunate Mr. Rogers-like simplicity and repetitiveness that may send you scrambling for the fast-forward button.

But that's a quibble. In general, these lessons provide a means of learning four very complex programs in well-organized bite-size portions. And whatever problems you may have with the individual modules, if you go through an entire series (which takes about two days for *Excellerate* and one day for each of the others), you'll acquire an excellent working knowledge of the program.—*Lawrence Stevens*

See Where to Buy for product details.

Macware Reviews



The Finder in a Desk Accessory

DiskTools II 1.0

Desk accessory Finder alternative.

Pros: Performs some functions the Finder can't; elegant interface; improves Standard File; flexible Quick Launch feature; compatible with AppleShare. Cons: Very large (over 90K). List price: \$49.95 (included in DiskTools Plus). Requires: 512K. Copy protection: None.

Managing an ever-growing assortment of files on your hard disk can become quite a chore when you have to return to the desktop every time you want to copy a file or perform mundane file-organizing tasks. *DiskTools II* from Batteries Included, a division of Electronic Arts, bypasses the trip to the desktop by providing most of the functions of the Finder in a desk accessory; it even performs some functions the Finder can't.

Icon Do It

With 14 icons, *DiskTools II* imitates Finder functions (see "A DA Imitates the Finder"). You merely select a file or group of files (you can operate on multiple files), and then click on the appropriate icon. You can erase, eject, unmount, or change the name of your disk. (Remounting your hard disk is simple, using a menu selection.) Files and folders can be renamed, copied,

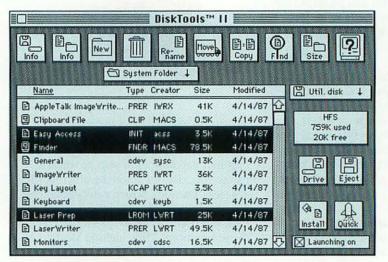
moved, found, or trashed. You can create empty HFS folders with a single click. Clicking on any icon will bring up a dialog box related to the operation you've chosen. To delete three files, just select the files, then click on the Trash Can icon. A dialog box tells you how many items you've selected and asks you to confirm deletion. If you hold down the Shift key when you select the icon, the files will be deleted without a warning.

Info at a Glance

To ascertain the combined size of a group of files or folders, select those you want, then click on the Size icon to show the total in a dialog box. This is a function the Finder doesn't provide. When you get file information, you can check the file creation and modification dates, change the type and creator, or set any of the file bits. You can also see how much free memory you have left by clicking on the Question Mark icon. This window also shows your Mac's technical specifications. You can also

Features from other file-finding programs (Apple's Find File, PBI's Locator, and PCPC's Eureka) have been combined to create DiskTool II's Find function. You can search for any file that contains, begins with, or matches the string you type; any file modified on, before, or after a specific date; or any file of the same type or with the same creator as you indicate. Disk-Tools II searches for the files, then lists them in a window. When you select the file, its path appears in another window (see "Finding Files"). If it's only one file you're looking for, just double-click on it after it's been found, and DiskTools II will jump to that file, already highlighted in its folder. To locate several files simultaneously, Disk-Tools II lets you copy each path to the Clipboard and later paste the paths into a texteditor DA like miniWriter.

DiskTools II can launch applications or documents by double-clicking on a file name. If documents have the same creator, you can launch multiple documents by simply selecting the files and pressing Return.



A DA Imitates the Finder

The DiskTools II file management window shows ten icons across the top and four along the right side. You can select multiple files from the file directory list, then click on the appropriate icon to perform the function that the icon represents.

use *DiskTools II* to see how much space you have left on your disks or to look at the files you have on your hard disk.

With its rewritten Standard File, *Disk-Tools II* remembers how deep you've gone in your folders (even when you are tabbing back and forth between volumes), and it remembers the scroll position of the directory windows. This makes file management easy. Once you locate a file in a folder you can copy it to another folder in another volume without ascending and descending directory paths. You can type a letter on the keyboard to select a file from the *Disk-Tools II* list; every function has a command-key equivalent.

This is an efficient way to unpack multiple *PackIt* or PIT files.

A Quick Launch feature lets you easily launch applications and documents without having to dig through a hierarchy of folders. You can add as many files as you want to the Quick Launch window and rearrange their order by using the Cut and Paste buttons. You can even insert labels (such as "communications" or "utilities") between files to make the list easier to read.



Finding Files

DiskTools II found seven MacPaint documents. The program lists the paths in a scrollable list at the right. You can paste these paths—via the Clipboard—to a text editor for later reference.

DiskTools II is one of seven desk accessories included with DiskTools Plus. For \$49.95 you also get a wonderful calendar DA, a free-form phone pad DA, two calculators, a DA that activates windows on the screen, a text-printing DA that allows you to print in the background (but you can't quit the application you're in), and a program to print your calendar files. The whole package is one of the best values on the Mac market today. And DiskTools II is the one desk-accessory I can absolutely not live without. It'll help you manage your files efficiently and elegantly.—Rob Habn

See Where to Buy for product details.

Expanding Your Network

MultiTalk MT-100 Port Server

Serial port server for AppleTalk. Pros: Allows connection of up to three standard asynchronous serial devices to network; automatic configuration for operation at 75 to 9600 baud. Cons: Specific device drivers must be obtained separately. List price: \$695.

Requires: 512K.

NetModem V1200

Network modem for AppleTalk. Pros:

Network users can sbare a modem; convenient remote operation; answers incoming calls and routes to appropriate network user. Cons. 300-or 1200-baud operation only. List price: \$599. Requires: 512K.



AppleTalk networks that can connect as many as 32 devices are cost-effective and convenient—and they are proliferating. Two new devices that allow networks to serve more people with fewer de-

vices and greater flexibility are Abaton's MultiTalk, a serial port server that opens networks up to asynchronous serial devices not specifically designed for Apple-

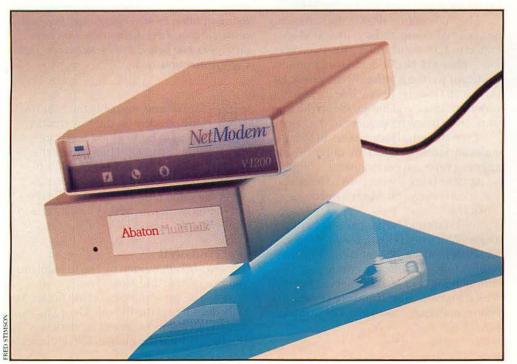
Talk, and Shiva's NetModem, the first modem designed specifically for AppleTalk.

MultiTalk

Ordinarily, only peripherals that understand the AppleTalk communication protocol can be connected to an AppleTalk network. Abaton's MultiTalk port server removes this constraint. MultiTalk consists of a small box with four 8-pin connectors: one for an AppleTalk network connector and three for standard serial connectors. You can connect up to 3 asynchronous serial devices (such as printers, plotters, scanners, modems) to MultiTalk using standard serial cables. By changing the MultiTalk DIP (Dual In-line Package) switch settings you can use up to four MultiTalk boxes in a network and get simultaneous access to 12 serial devices. The serial devices do not have to be compatible with AppleTalk. Operating at 75 to 9600 baud, MultiTalk automatically adjusts to the configuration specifications for a device.

MultiTalk installation is very straightforward, but you must follow a certain sequence, a fact not really explained in the manual. You install MultiTalk by connecting it to the Mac's printer port with an Apple-Talk Connector Kit. You connect peripherals with standard serial cables and then plug in MultiTalk. (If it is plugged in before the cables are connected, it will not initialize properly.) The MultiTalk Installer program must be run on the start-up disk for each Macintosh in the network in order to name the available ports (see "Installation"). Once you click OK, the program modifies the System file on the current start-up disk, adding about 4.5K. You can restrict access to sensitive resources, such as a mainframe link, by omitting the port's name during installation. Later you can easily update port assignments using the Installer.

After installation, operation is simple. When an application tries to access the Mac's modem port, a dialog box pops up identifying the serial devices; names of devices that are unavailable are grayed. Although all serial devices connected to MultiTalk are controlled through MultiTalk software, you continue to select other network devices (such as a LaserWriter) from the Chooser.

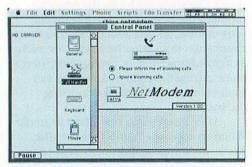


Macware Reviews

MultiTalk has several limitations. Unlike Softstyle's *MacEnhancer*; MultiTalk's software does not include drivers for serial devices manufactured by other companies. Mac-compatible device drivers must be obtained from your dealer or the product manufacturer. While MultiTalk is compatible with most communications programs and network software, it is not compatible with *MacLink Plus*, *Telescape Pro*, and *Switcher*:

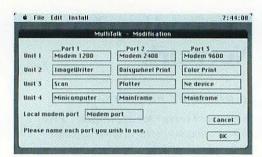
NetModem

NetModem, a 1200-baud modem and AppleTalk server bundled into a single package, is designed specifically for Apple-Talk networks and the Mac. Several features make NetModem's operation as simple and familiar as operating a directconnect modem. Instead of front-panel status LEDs, which cannot be seen by someone a dozen feet away, the modem's status indicators are displayed in the upper right corner of your screen (see "The Status"). During connection, tones usually made audible by a speaker inside the modem are sent to your Mac's speaker, so that no matter how far away the modem is, you can still hear the progress of the call. Two software-based modem servers, Infosphere's ComServe and Mirror's ModemShare, lack these convenient features. NetModem also differs from software-based communication servers in its ability to answer incoming calls and notify the appropriate network user that a call has been received.



The Status

NetModem indicates its status with a menu bar front-panel display that resembles the front-panel LEDs of direct-connect modems. The status indicators also serve as the title for a pull-down menu that allows access to several special Net-Modem functions: Hide LEDs; Release, which allows the modem to be used by others in the network; Attention; and Help. The Call Handler dialog box (displayed using the Control Panel desk accessory) allows you to configure your Mac to listen for incoming calls.



Installation

MultiTalk's installation program must be run on the start-up disk for each Mac in the network. Here, a dialog box allows you to name each port. Since you can have up to four MultiTalk units in your network, as many as 12 ports can be named, as well as a local modem port.

Further, NetModem is an independent network device; software servers require a dedicated host Mac.

NetModem installation is simple. You attach it to the network using the AppleTalk Connector Kit. Run the NetModem installation program (it places two new files in the System Folder; the System file is not altered). After that, restart the Macintosh (if you don't, it's possible a system crash will occur because NetModem may require more system-heap RAM than has been allocated). Set your communication program to access the modem through the printer port and you're ready to go online. Net-Modem is compatible with all popular communication programs for the Mac.

Like most modems, NetModem uses the Hayes AT command set. Its speed is limited to 1200 baud, but a 2400-baud version is planned. NetModem lacks a phone connector for the handset of the phone. If you want to use the phone line for voice communication, you have to swap the line connection from the modem to the phone.

Even though all computers in the network can access NetModem, only one computer at a time can communicate online. If the modem is busy when you request access, it can notify you when it becomes available.

MultiTalk and NetModem solve different problems, but both make AppleTalk networks more flexible and cost-effective by allowing network access to resources without tying up a Mac as a server. Both devices are easy to install and are compatible with most existing software. They require

little if any training for users to make the most of the expanded network capabilities.—Nanci Hamilton

See Where to Buy for product details.

Working Software Opens Up

Findswell 1.0

File finder. Pros: Finds files quickly; great shortcuts through the HFS; easy to install and use. Cons: Several applications on the market offer similar features, some for free; does not edit, delete, or move files. List price: \$49.95.

Requires: 512K. Copy protection: None.

LookUp

Desk accessory dictionary. Pros: Quickly checks spelling; guess feature accepts wild-card characters; works with almost all Mac software. Cons: Guess feature is weak; full-featured DA spelling checkers are available for similar prices. List price: \$74.95. Requires: 512K. Copy protection: None.

Spellswell 2.0c

Spelling checker. Pros: Update adds guess feature and improved proofreading; looks at the number of spaces between words; identifies unpaired parentbeses and quotation marks; works with Word 3.01. Cons: Weak guess feature; too many unnecessary words flagged by proofreader; accented words cannot be entered in dictionary. List price: \$74.95. Requires: 512K. Copy protection: None.

Spellswell, arguably the best spelling checker on the Mac market, used to be Working Software's only product. Then earlier this year it released Findswell, a file finder, LookUp, a desk accessory

dictionary, and *QuickLetter*; a desk accessory letter writer, as well as a new version of *Spellswell*.

Findswell

Findswell, written by David Dunham (author of Acta and MiniWriter), is an easy-to-use yet sophisticated file finder. Not only does it find the file quickly, it allows you to open the document immediately by double-clicking the mouse. For documents

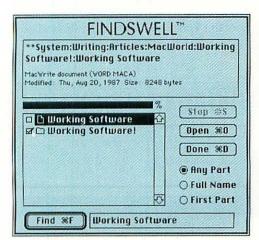
you frequently use, the program lets you click in front of the file name to leave a check mark. Every time you open *Findswell*, the names of all the check-marked files are visible and ready to be opened, no matter how deeply the files are nested in the Hierarchical File System (HFS). Above the file names, the program displays the file's path as well as data you'd expect to see in Get Info (see "Dodging HFS").

Findswell is easier to install and handier than a desk accessory—just drag the icon into the System Folder. You access Findswell by clicking on a button located at the bottom of the Standard File dialog box. %-O then %-F will get you there even faster.

Launcher, another icon on the *Findswell* disk, opens applications. I find it only marginally useful, as it does not have *Findswell*'s search functions, and it will not simultaneously launch a document with an application.

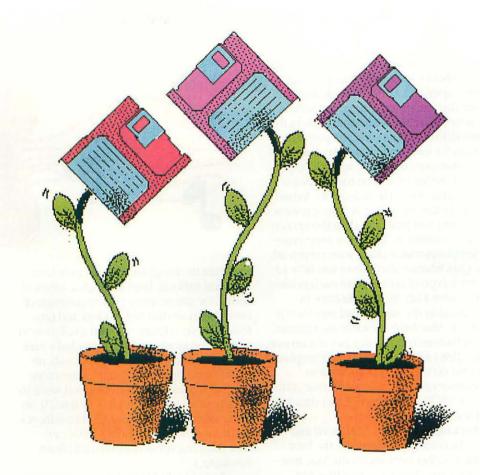
LookUp

LookUp is a dictionary DA that appears as an item in the menu bar of most applications and lets you quickly check the spelling of a word. To tell whether a word is spelled correctly, you simply select the word and a \(\mathbb{H}\)-key combination. If you've spelled it correctly you'll hear a beep; if the sound is turned off, a dialog box will appear confirming your spelling. If the word is spelled incorrectly, a full window opens. Like Spellswell, LookUp offers three choices for finding the correct spelling:



Dodging HFS

Findswell is fast and easy to use. Here it shows the path to the selected document, as well as the Get Info data. Putting a check in front of the document ensures that its name will be in the window the next time you open Findswell. Double-click on a document's name to open it.



you can scroll through the dictionary (when you click on a suspect word in the text, the program locates the closest alphabetical match to the word you select); you can type in a word and the program automatically searches for the closest alphabetical match; or you can select the Guess button, which guesses the correct spelling phonetically. If you only know part of a word, you can use wild-card characters. LookUp uses Spellswell's dictionary-in fact if you have Spellswell on the same disk they can share the dictionary. Double-clicking on the correct spelling enters it in the text of almost all Macintosh applications, including other DAs. Notable exceptions are OverVue and Microsoft Excel.

Spellswell

Spellswell, Working Software's spelling checker, is now out in version 2.0c (For a review of the previous version, see Reviews, Macworld, August 1987). Those who already have it will definitely want the \$15 upgrade. The most important improvement is the addition of a Guess feature. Clicking on the Guess button, then double-clicking on the correct spelling, is the

fastest way to correct errors—even typographical errors—in any spelling checker. Spellswell's new guessing ability is good, but not as thorough as Electronic Arts' Thunder.

Spellswell's proofreading capabilities have also been improved. The program checks incorrect spacing between words and punctuation marks, and unpaired quotation marks and parentheses. Unfortunately, this causes the program to suspect such words as *Mr.* and *Dr.* because they often don't have two spaces after the period.

Spellswell is the first independent spelling checker to work correctly with Word 3.0 (and 3.01). A Transfer menu item has also been added to speed up switching between Spellswell and a word processor. Supplemental legal and medical dictionaries are available for \$99.95 each.

QuickLetter

I looked at a prerelease version of Working Software's most unusual new product, a word processor DA designed for writing letters. Its unique features so speed up and simplify the chore of letter writing that I expect *QuickLetter* will become very popular.

To create a letter with QuickLetter, you choose a form letter from those includ-

ed on the disk, or a custom stationery page (or style sheet) you've previously designed. You then open the Address Book and find or enter the name of the person you're writing to. There are additional lines in the Address Book for notes and the preferred salutation for each individual. An Auto-Paste button puts the name and address at the top of the letter and on the envelope template, and enters the salutation. A date stamp adds the day's date. A page-preview function lets you grab and drag the text on the page to center it. There are even envelope templates that include your return address. QuickLetter also shows you how to align each type of envelope in each printer.

Priced at \$129.95, QuickLetter includes roughly the same word-processing features as MacWrite. Notable exceptions: you can have only one ruler per document, tab functions are elementary, and graphics cannot be on the same line with text. QuickLetter can read its own format, Mac-Write, or ASCII text. It can export data as ASCII text.

Working Software's Spellswell and related dictionary products are the best spelling checker options on the Mac market today (see "The Final Spelling Test," Macworld, October 1987, for an in-depth comparison). Findswell is small, fast, and easy to use-a likely candidate for the most popular of the recent file finders. Working Software is gaining more attention for its fairly priced, well-crafted products and excellent customer support.—Scott Beamer

See Where to Buy for product details.

The Musical Tutor

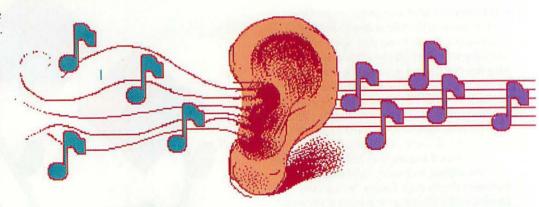
Listen 2.0

Ear-training drills. Pros: Provides easy-touse drills for amateur and professional musicians; level of difficulty easily adjustable by user; works with MIDI instruments. Cons: Does not include drills for rhythmic notation/accuracy. List price: Version 2.1 \$99. Requires: 128K. Copy protection: Key disk.

of ear training, which teaches an aspiring



Unfortunately, exercises vital to a music student's understanding of melodic and harmonic structures are also repetitive, time consuming, and often terribly boring. This is especially true



musician to recognize chords, note intervals, and melodic lines through a series of drills that can severely try the patience of even the most devoted student and professor. Music educators found a solution in Apple II programs, which provided a variety of learning levels simultaneously, repeated exercises indefinitely, were more accessible than human tutors, and were infinitely more patient. Imaja's Listen 2.0, an ear-training program for the Mac, adheres to this approach. (Version 2.1, the current shipping version, is available from Resonate.)

Listen includes 15 different exercises that are grouped into three main areas: melodic exercises to improve melodic memory, sequence, and range; interval exercises to stress pitch relationships; and chordal exercises to improve recognition of chord types and inversions.

Like those used in college ear-training or music theory courses, Listen's drills are logically laid out, practical, and extremely flexible. The user can easily adjust the difficulty, length, mode, timbre, and range of the melody and interval drills. Chord drills can be preset to include everything from simple triads to half-diminished 13th chords. Other user options set the first note displayed in the chord (if any), the types of inversions used, and the first note played in the chord. This flexibility not only increases the program's usefulness for both beginning and advanced students, but also enlivens what would normally be a tedious set of exercises.

Answers with MIDI

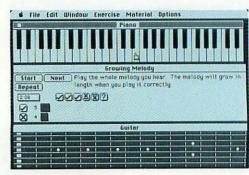
Listen displays information in three main windows: Piano, Guitar, and Progress. Answers input with the mouse or the MIDI

(Musical Instrument Digital Interface) keyboard appear on the keys of the Piano window or on the frets of the Guitar window. The sound is played through the Mac's internal speaker and through the MIDI keyboard if it's hooked up.

Listen's MIDI implementation is quite well thought out. The program lets you vary clock speed, serial port, and MIDI channel. While whole chords cannot be played into the program at once, Listen will accept arpeggiated notes relatively quickly.

Listen's piano-keyboard input option reinforces the relationship of the note sounds with their locations on the piano keyboard. Since nearly all college music programs require piano literacy, this is an important feature.

The Progress window displays instructions for the current drill, time elapsed since the exercise began, number of correct and incorrect answers, and hints suggesting which answers were wrong and why (see "Progress Window"). The program displays two other sets of information: the Timer window, which shows how much time remains before an answer is



Progress Window

The Progress window tallies the correct and incorrect responses in a sequence of notes. A check mark indicates a correct answer, while an X above or below a line indicates an incorrect answer that is too high or too low.

required (determined by user); and the Notation window, which shows the drill's questions and answers in standard musical notation. Unfortunately, if you use the Notation window, the answers remain in view during the drill.

Listen sets some new standards for music education software in ease of use and flexibility. Several colleges have already incorporated Listen into their regular ear-training/music theory curricula. Although a set of exercises to strengthen rhythmic accuracy and notation would make it more useful, Listen is still one of the best pieces of music education software currently available for the Mac. —Erik Holsinger

See Where to Buy for product details.

Courseware Construction Set

Course Builder 2.0

Courseware authoring language. Pros: Simple, icon-based programming; creates standalone applications; built-in drawing and animation tools. Cons: Inability to mix fonts and styles in text windows; lack of support for gray scale or color. List price: \$395. Requires: 512K. Copy protection: None.

Although specialized systems for courseware development have been used on mainframes for

many years, the Macintosh has been limited to traditional computer languages like Pascal that aren't well-suited to developing instructional programs. TeleRobotics International has changed all that with *Course Builder*, a new authoring language that combines the Mac's ease of use with the powerful tools needed to write courseware incorporating text, graphics, animation, and sound.

Building Blocks

Course Builder programs are constructed from blocks that are represented by icons in the Tool Palette (see "Blocking It Out"). Blocks can be cut, pasted, or

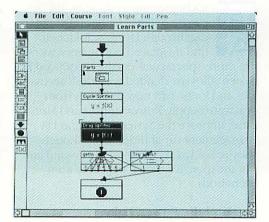
moved, singly or in groups. An invisible grid automatically aligns the blocks in neat rows and columns. However, unlike *Mac-Draw*'s grid, *Course Builder*'s grid can't be turned off.

Course flow within a program is designated by arrows you draw by dragging the cursor from one block to the entry point of another. Since there aren't any restrictions on the number of arrows or their direction, complex course windows tend to look like rush-hour traffic. Flow along any path can be dependent on the values of up to five different variables, such as the time taken or the number of attempts made to respond to a question correctly. *Course Builder*'s conditional branching capabilities allow for the implementation of elaborate teaching strategies.

Blocks that comprise a subsection of a given course can be conveniently grouped within larger, specialized blocks called *nests*. Although flow within nests can be controlled entirely by arrows, *Course Builder* also allows random and linear branching for writing drill-and-practice applications. Another type of block, the *list access nest*, gives the student direct access to any block via a scrollable list of all the blocks within a nest.

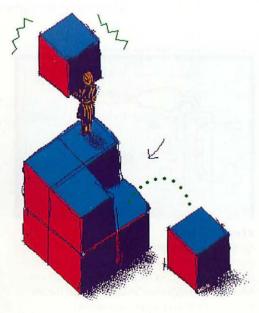
Ins and Outs

Course Builder provides for a rich variety of input methods, including typing, menu selection, and clicking on regions or radio buttons. Text input can be scanned for the presence of particular combinations of character strings, and up to ten different reply-dependent exit paths can be specified. The author can choose to ignore



Blocking It Out

Courseware is constructed from basic building blocks selected from the Tool Palette on the left, with flow between blocks indicated by arrows. As blocks are added, a flow chart of the course builds up.



case, punctuation, or extra spaces in an answer, and a time limit can be set for each response. The only missing feature is the capability to search for phonetic equivalents of specified words or phrases.

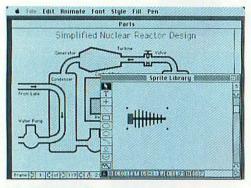
Text output is done in text windows, which unfortunately limit you to only one font, size, and style for all the text in a window.

If Apple's *Macintalk* driver is in the System Folder, the text can be presented in synthesized speech. (*Macintalk* is included with *Course Builder*, but the current version is incompatible with the Macintosh II). *MusicWorks* and digitized sound files can also be set to play as text is displayed.

Course Builder really shines in its animation sequences, which are programmed using design blocks and consist of a succession of static background frames with superimposed moving elements called sprites (see "The Sprite Stuff"). The design window in which the backgrounds are laid out provides many of the object-oriented drawing tools familiar to MacDraw users, as well as several bit-mapped graphics tools. Pictures can be imported through the Clipboard, but color and gray scale aren't supported.

Sprites are also designed using objectoriented drawing tools and are overlaid on the background frames. Specifying sprite movements is very easy: you set the starting and ending positions of the sprite, and *Course Builder* fills in the intermediate positions for you. Complex simulations are possible using the animation sequences in conjunction with calculation blocks, which let you manipulate variables to de-

Macware Reviews



The Sprite Stuff

Sprites are animated graphic elements in front of static backgrounds. Each animation window can have up to 32 of them, and each sprite can bave up to 16 different "poses," such as the successive positions of a person walking.

termine the position and other attributes of the sprites.

What's the Score?

No course authoring system would be complete without facilities for recording student responses, scoring, and course registration. Course Builder can generate several types of report files, ranging from simple statistics to complete records showing every type of input and every branch taken. There are also sets of internally maintained variables on which a student's path through a lesson can be based, via conditional arrows. Course Builder's registration function is limited to specifying names and passwords for up to 200 students per course.

A major bonus is the program's ability to save courses as documents or as standalone applications that can run on any Macintosh without the need for a run-time module.

Individually, Course Builder's building blocks are easy to use, but developing courseware remains a time-consuming and intricate task. Course Builder can no more help you create effective course material than a word processor can improve your writing. The documentation, although complete, would benefit from additional examples, as well as a more comprehensive index. Also, Course Builder sometimes seems to overuse the Macintosh interface, forcing you to click on items to fill in formulas rather than allowing you to type them out.

Although at first glance it might seem that Apple's HyperCard can duplicate many of Course Builder's functions, HyperCard lacks the sophisticated animation features, it is less flexible in its manipulation of windows, and it is not as well suited to writing interactive simulations. Course Builder's ability to create stand-alone applications is another big plus not found in HyperCard.

All in all, Course Builder is an excellent choice for writing instructional software on the Mac.-Franklin Tessler, M.D.

See Where to Buy for product details.

More on Hand

PowerStation 1.0

Finder alternative. Pros: Excellent, intelligent Finder replacement; versatile applicationand document-launching configurations; good documentation. Cons: Buttons can't be resized. List price: Version 1.1 \$59.95, includes Pvro screen saver. Requires: 512K. Copy protection: None.

Suitcase 1.0

Desk accessory organizer. Pros: Circumvents problem of limited fonts and desk accessories in System file; smart bandling of desk accessory/font conflicts. Cons: None. List price: \$59.95, includes Pyro screen saver. Requires: 512K. Copy protection: None.



The Finder is more than adequate for general file maintenance, but it's beginning to show its age. It can be a downright nuisance to dig through layers of folders to find misplaced documents; worse

are those spectacular crashes produced by System files overloaded with desk accessories and fonts. Two new products from Software Supply, PowerStation and Suitcase, improve the System's file- and DAmanagement capabilities. Even though they're sold as separate products-and are not inexpensive-you'll probably want them both.

Feel the Power, Luke

Although there are several public domain and shareware Finder replacements (such as Oasis and WayStation), Power-Station is the most powerful and elegant offering yet. It lets you group applications

and documents without using folders (although it isn't meant to replace the folder metaphor), and it's fast.

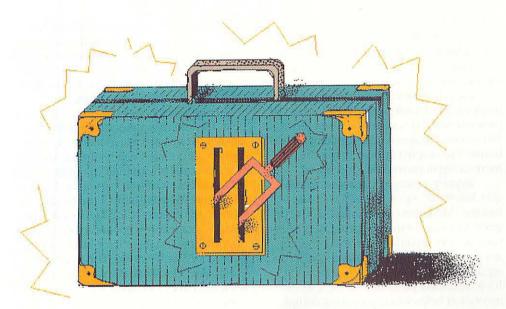
PowerStation pops up whenever you start up your Mac or quit a program (much like the Finder does, although Power-Station loads more quickly). The main PowerStation window consists of a menu bar and lots of buttons. You can create up to 16 screens or "pages" of buttons. Each button can launch an application, open one or more documents, or open a desk accessory. If your Mac has a large external monitor, or if you use a Mac II, the number of buttons per screen varies: more screen space, more buttons. Each page of buttons is instantly accessible by clicking the mouse or entering a keyboard command. You assign each page of buttons a name (like "graphics") and then install the corresponding applications, documents, or desk accessories into the buttons on the page (see "Graphics Page"). You can label the buttons as well as cut, copy, and paste them (on the same page, or between pages), but you cannot change the button size.



Graphics Page

The buttons on this page open graphics applications and documents. The arrow buttons located at the bottom of the screen represent other pages of buttons.

PowerStation offers a variety of ways to automatically rearrange the buttons on a page. If an application can create its own documents, then PowerStation puts a small document icon next to the program button. When clicked, the document icon opens into a larger window in which you can install documents from any number of different folders. You may choose to have a document preselected in this window-a useful feature if you always start your word processor or page-layout program with a



custom dummy document. One of *Power-Station*'s most useful features is its ability to install in the document launching window, in one alphabetized, scrollable list, all of the files created by an application.

PowerStation features full keyboard support. You can activate \$\mathbb{H}\$-key combinations, select a button by typing the beginning of its name, and launch the application for a selected button by pressing the Return key. The Mac Plus cursor keys allow you to move between pages of buttons and between individual buttons. Software Supply offers full online help and a summary of all the \$\mathbb{H}\$-key combinations and shortcuts in the program. PowerStation lets you automatically print single or multiple documents (like the Finder's Print command does). The program's documentation is extremely well written and complete.

May I Take Your Suitcase?

Many technically oriented Mac owners delight in cramming more than 15 desk accessories into the System, regardless of how unstable most System files become when subjected to this sort of hacking. Software Supply's *Suitcase* DA manages your desk accessories and fonts by giving you access to them through *Suitcase* rather than through your System file. The program also manages F-keys, although you still need Carlos Weber's *FKey Manager* to create your F-key file.

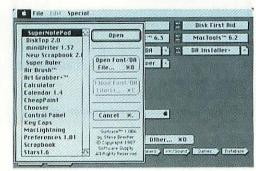
When it's placed in the System Folder, *Suitcase* appears as a desk accessory when you boot up your Mac (it's an Init that installs itself in the Apple menu—no Font/DA Mover required). You create a new folder inside your System Folder to hold desk ac-

cessories and fonts. Any desk accessory or font file you put inside this folder will appear in your menu the next time you boot up (see "One DA"). While testing *Suitcase*, I installed about ninety desk accessories in my System; *Suitcase* did a superb job of managing them, along with my bit-map and LaserWriter fonts.

Software Supply designed Suitcase to be operated with keyboard commands as well as mouse clicks. You can open Suitcase with a \(\mathbb{H} \)-key combination, scroll through a list of all installed desk accessories with cursor keys, or select a DA by typing the first few characters of the file name.

Pyromania

Included with both *PowerStation* and *Suitcase* is a screen-saver Init called *Pyro*, which wins a prize for displaying the prettiest show of any Mac screen-saving utility. Fireworks erupt on the screen, and if you are using a Mac II, they're in color. Those



One DA

By installing Suitcase in your System file you have access to an almost unlimited number of desk accessories and fonts. When desk accessories are not installed directly into the System file, backing up your hard disk becomes a simpler task. using System version 4.1 or later can set *Pyro* preferences in the Control Panel to determine whether background tasks like spooling should continue when *Pyro* is on. (Those using older System versions can set these parameters with a separate application.) Since *Pyro* does interrupt printing and downloading, it will not load if those functions are in use.

Software Supply has provided the Mac community with high-quality, indispensable software. Once you've used Power-Station for more than an hour, you'll wonder how you lived without it. When it's used in conjunction with a good filemanagement DA (such as DiskTop, Disk-Tools II, or HFS Locator Plus), the Finder can be completely bypassed, adding considerable overall speed to your system. If you have a hard disk, get PowerStation. You won't regret it. And for access to virtually unlimited numbers of fonts and desk accessories, there is simply no better utility than Suitcase. Even though some may consider these products to be priced slightly high, the old saying "you get what you pay for" was never more appropriate. –David Biedny

See Where to Buy for product details.

Mail-Merging Power for MacWrite

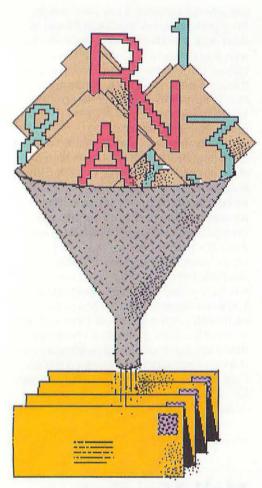
MergeWrite 1.0.

Mail merge for MacWrite. Pros: Allows Mac-Write users to do mail merges: provides for conditional inclusions, range selection, and data verification of each record. Cons: Can't edit text in program; no keyboard equivalents.

List price: \$49.95. Requires: 512K. Copy protection: None.

To prepare form letters with *Mac-Write* you've always had to change the address and salutation before rinting each copy. The original version

printing each copy. The original version of *Microsoft Word* offered a mail-merge feature, but it had some peculiarities. For instance, you couldn't interrupt a print merge in process, and the program would flash messages like "Data Record Too



Long" without suggesting a way to fix the problem. Also, you couldn't see on screen exactly what would be printed. Software Discoveries' *MergeWrite* eliminates these problems, and does so inexpensively.

Merger Mania

To set up a merge file, first create the form document in *MacWrite*. As you enter the text, type in field names where you want the program to insert appropriate data. *MergeWrite* offers a choice of field markers: square brackets ([]), curly brackets ({}), or the familiar international quote marks used with *Word* (« »). The program lets you insert conditional instructions to further customize a document.

As with most other merge programs, you need to set up a separate data document that contains the information to be merged with each field name. This data document can be a *Record Holder* file, an

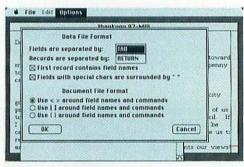
ASCII file from another database program, or a text-only file created by *MacWrite*. (*MergeWrite* will not accept text-only files from other word processors unless they can be saved to *MacWrite*.)

Users may select field and record delimiters; the default settings are for tabs between fields and returns between records. This control makes it easy to select a delimiter that doesn't appear in the document—a big improvement over Word.

To print a merge document, simply quit *MacWrite*, open *MergeWrite*, and select the documents to be merged. The program lets you control the printing process: you can sort records by any field, merge any range or the entire list, and check the accuracy of each record before printing. It's a fairly easy process. The clear documentation helps when preparing complicated conditional instructions.

Unfortunately, you can't edit anything in *MergeWrite*. If you see an incorrect entry you must either skip the flawed entry and complete the merge print or abort the whole process, go back into *MacWrite*, fix the entry, and then return to *MergeWrite*. Now you can select a range starting where you left off. This means you don't have to reprint the entries you've already printed correctly.

Unlike Word, MacWrite doesn't allow new lines without new paragraphs; if data records have different numbers of lines, you must embed an extra return in the data field and surround the field with quotes.



Setting Delimits

MergeWrite lets you choose your own delimiters for both the form and the data document.

I tested the program with both *Mac-Write* 2.2 and 4.5, using conditionals and complicated formats. The program worked beautifully; the only problem was that the one keyboard command it supports (\mathfrak{H}-Q) to quit the program) didn't function.

For the price, this program is hard to beat. I would recommend *MergeWrite* to any *MacWrite* user who'd like to do mail merges, although if you're already using a word processor with built-in merge, you're probably better off staying with it. You can use *MergeWrite* with the View module in Cortland Computer's *Top Desk*—a desk accessory that lets you cut and paste multiple documents—and the cursor key support offered by *MacWrite* 4.6. This combination makes *MacWrite* the word processor it should have been all along.

—*Sbel Horowitz*

See Where to Buy for product details.

A Choice Environment

TML Modula-2 for MPW 1.0

Modula-2 compiler, MPW tool. Pros: Low price; good code quality; examples; works with other MPW compilers. Cons: Lack of type-transfer functions (type coercion). List price: \$99.95. Requires: 512K. Copy protection: None.

TML Systems developed TML Pascal, the first native Pascal compiler for the Macintosh. Now TML has released a Modula-2 compiler for MPW (the Macintosh Programmer's Workshop), offering a high-quality product at a very reasonable price (MPW Pascal and MPW C, for example, cost \$125 each for version 1.0 and \$175 each for 2.0 beta versions). Another MPW Modula-2 compiler, from SemperSoft, will be released in a few months.

What's the reason for this surge of interest in Modula? Simply this: Modula is the language in which Niklaus Wirth claims to have "fixed" the shortcomings and omissions in his original design of Pascal. It has numerous attractive features, including based variables (you may optionally specify that a given variable "resides" at a spe-

cific address), procedure variables and parameters, and encapsulation of local modules. The syntax is similar to Pascal (though not identical), while the approach is closer to that of C (you can bend the rules considerably as long as you notify the compiler of your transgressions).

Compiler

TML Modula-2 works equally well with both MPW 1.02 and MPW 2.0B1, and it conforms to the conventions established by the Apple compilers. The shell variables the compiler uses in searches are MInterfaces (for compiled Definition Modules) and MLibraries (for Object Modules). This corresponds to the PInterfaces—which the more familiar Pascal compiler uses—and the PLibraries that contain Object Modules. The C analogs are CInterfaces for .h files and CLibraries for object files. Even the compiler options match Pascal conventions when there is an equivalent capability.

The documentation is well organized and includes a useful index. The manual is as complete as the generally satisfactory *TML Pascal* manual, and it's well written (despite occasional spelling errors). TML provides informative examples, and the original sources are fully accredited.

One annoying deficiency of the compiler is the lack of type-transfer functions. With type-transfer (called coercion in Pascal and casting in C), it's possible to signal the compiler to relax type checking in certain instances. Often this permits more compact programming by allowing otherwise "illegal" operations. While VAL can provide an equivalent function, its use makes the code larger and slower. It introduces an extra function call in the program and requires temporary variables to hold the results of calls to VAL, thereby increasing code size.

The compiler allows for the creation of "textbook" applications in a manner totally transparent to the user. Running these applications, you see a single window and operate as if you were using a less capable machine (a PC, maybe?). Full support for *Inside Macintosh* volumes 1-5 is provided. The provided SYSTEM module also supports INLINE and CODE procedures, greatly enhancing low-level access to the machine. The current release does not have 68020 or direct 68881 support.

I have a few minor suggestions for improving *TML Modula-2*, other than inclusion of type-transfer functions. Support for sets larger than 16 elements (BITSET)—at

How Much, How Soon, How Fast

Application Size (in bytes)

Development Environment	MiniEdit	CatchMe	FileDemo
TDI Modula-2 1.00A	11,861	4928	8520
TML Modula-2 1.0	12,982	4606	7986
TML Pascal 2.02	10,611	3894	6809
MPW C 2.0B1	12,112	4228	7143

Three programs were used to gauge how large an application each development system generates: Mini-Edit, by Stepben Chernicoff; CatchMe, by Bob Perez; and File-Demo, by Chris Morgan.

Development Environment	Compilation Time (in seconds)
TDI Modula-2 1.00A	212
TML Modula-2 1.0	176
TML Pascal 2.02	89
MPW Pascal 2.0B1	181

This table shows how long each system took to compile and link MiniEdit to create a stand-alone application.

Development Environment	Solution Time (in seconds)	
TDI Modula-2 1.00A	0.4	
TML Modula-2 1.0	0.8	
TML Pascal 2.02	0.8	
MPW Pascal 2.0B1	0.8	

TDI Modula-2 was able to solve Towers of Hanoi with 9 disks in half the time it took the other systems.

least to handle SET OF CHAR—would help. A more integrated interface (like that of *TML Pascal*) would free the programmer from having to remember which chapter of *Inside Macintosh* defines which routines, types, and variables. This would make *TML Modula-2* read a larger symbol file at compile time (although it no longer needs to open and close as many files), but would eliminate much file referencing by the programmer.

Like MPW itself, the compiler will run on a 512K Macintosh with at least 800K of

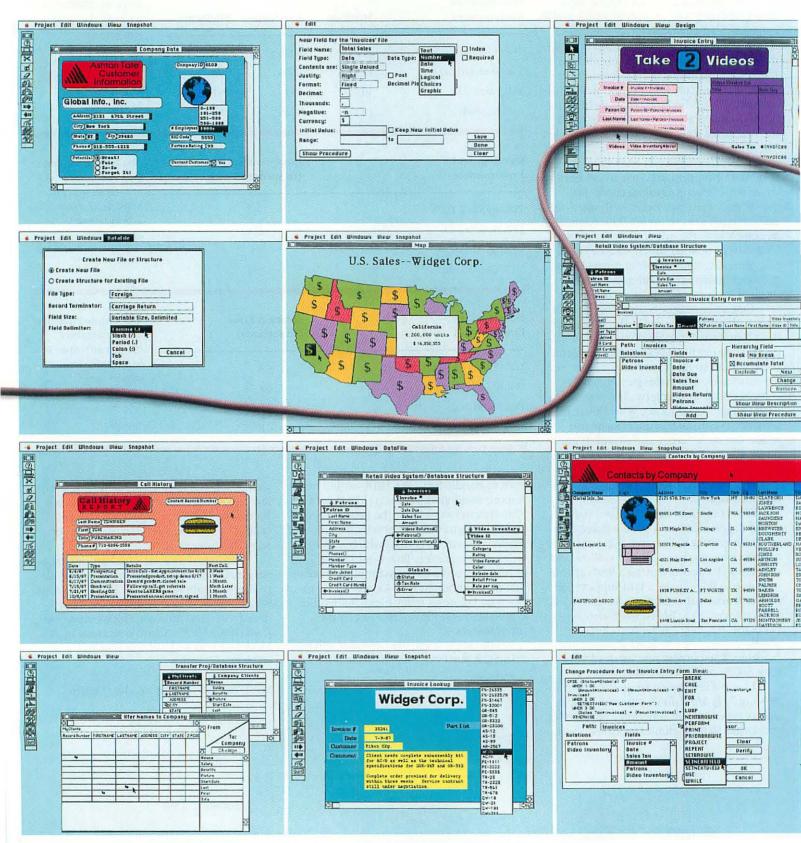
disk space. But it's inconvenient to use with anything smaller than a Mac Plus with a hard disk. The large capacity is not required by the compiler, but by the sheer scope and size of MPW.

TML has delivered a fine product at a reasonable price. Its support and upgrade policies are among the best in the business, which implies that the product will get even better and not cost a lot when it does. If you have MPW and are interested in Modula-2, you will like this product.

—Dennis Coben

See Where to Buy for product details.

Ashton-Tate and powerful database ever



ounces the most used by man or mouse.

It's called dBASE® Mac.

And it's the most powerful relational database designed for the Macintosh."

Especially since, unlike other databases, you can get that power

without knowing a thing

about programming.



Begin by
creating
and
relating
your
files.
Not just
linking them,

but relating them. So when you update one file, all your related files will be updated. Automatically. Immediately.

And remember, with dBASE Mac you can do all this without programming.

With a few clicks of your mouse, you can quickly redesign and rearrange your files to look at your data in any number of ways. Without disrupting it.

And without any programming.

Also using the selection of fonts and MacDraw*-like tools, you can design reports from the very simple to the very sophisticated. Right on the screen. So you'll know how it looks before you print it.

We're not talking about just text and graphics. With dBASE Mac, you can incorporate photos of people, parts and places into your database.

You can even import data from Ashton-Tate's dBASE III PLUS, dBASE III, or dBASE II, as well as ASCII files.

All without programming.

And all with the help of Macintosh's on-screen prompts and pull-down menus.

But if you want to go still deeper, the powerful dBASE Mac programming language will take you into a world of power and capability where no Macintosh has ever gone before.

If you would like a demo disk for \$4.95,* or the name of the dealer nearest you, call (800) 437-4329, extension 2400.** You'll see how this Ashton-Tate relational

database will make your Macintosh office work smarter.

Whether you are a huge organization.

Or a onemouse shop.





*While supplies last. **In Colorado, call (303) 799-4900. Extension 2400. Trademarks/owner: dBASE, dBASE II, dBASE III, dBASE III PLUS, Ashton-Tate/Ashton-Tate Corporation: MacDraw/Macintosh/Apple Computer Inc. ©1987 Ashton-Tate Corporation. All rights reserved.



William Randolph Hearst

Joseph Pulitzer

FOR 495, YOU TOO CAN

Publishing giants like William Randolph Hearst were men who craved power. So they would have loved Scoop.™

It's far and away the most powerful desktop publishing system available today. A totally self-contained program that gives you the equivalent of a \$100,000-plus typesetting workstation.

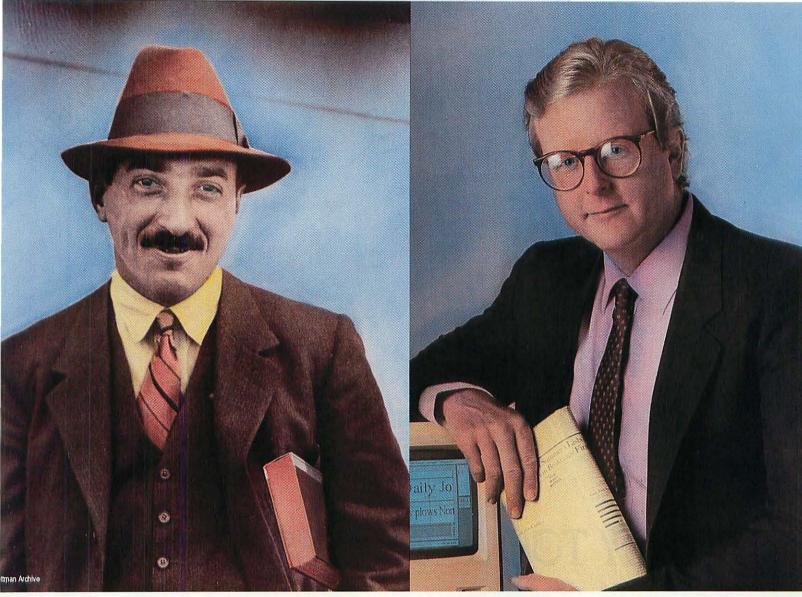
And Scoop is at your dealer now. So you don't have to wait any longer to

discover just how far desktop publishing has come.

Scoop gives you the power and flexibility to produce everything from simple flyers to elaborate brochures to books and newspapers. Quickly and easily, you can churn out documents of all kinds with a thoroughly professional look.

Scoop is the only desktop publishing program with a complete graphics package built-in. You'll find the kind of features you would get in Superpaint® and MacDraw.™

TARGET SOFTWARE AND SCOOP ARE REGISTERED TRADEMARKS OF TARGET SOFTWARE, INC. SUPERPAINT IS A REGISTERED TRADEARK OF SILICON BEACH SOFTWARE, MACWRITE, MACPAINT AND MACDRAW ARE TRADEMARKS OF APPLE COMPUTER, INC. ADDED LILUSTRATIOR IS A LICENSED TRADEMARK OF ADDED SYSTEMS, INC. MICROSOFT IS A REGISTERED TRADEMARK OF MICROSOFT CORPORATION. SA PREGISTERED TRADEMARK OF ABSTON, LICENST IS A REGISTERED TRADEMARK OF ABSTON, ADDRESS OF TRADEMARK OF OF TRA



Alfred A. Knopf

Now, your time has come.

CREATE A PUBLISHING EMPIRE.

There's an exceptional word processing program, too, along with a highly sophisticated spell checker.

What's more, Scoop accepts scanned images and documents from Microsoft® Word, MacWrite, Adobe® Illustrator, Abaton, Dest, MacPaint™ and on and on.

If you were at the recent MacWorld Exposition in Boston, you know the kind of stir Scoop created. People were genuinely astonished by its extraordinary capabilities, and by just how much they were getting for \$495.

So see your local dealer soon for a demonstration. Or send for a brochure by calling Target Software at 1-800-622-5483; in Florida, 305-252-0892. Or write us at 14206 S.W. 136th St., Miami, FL 33186.



NOW ANYONE CAN BECOME A PUBLISHING GIANT.



YES, THEY TOO ARE HAYES COMPATIBLE.

Our idea of "Hayes Compatible" has nothing to do with other modems and everything to do with personal computers. Which is

Smartmodem 1200ATM

the reason why Hayes modems are compatible with over 100 different personal

computers, including all Apple® computers.

For the Apple II, II+, IIe, IIc and IIGS, we offer the Smartmodem 2400[™] and Smartmodem 1200.[™] Or the internal Smartmodem 1200A, [™] a modem that plugs into Apple expansion slots for fast, economical 1200 bps operation. And our new Smartcom I, powerful menu-driven software with autodial/autoanswer and XMODEM protocol, brings out the best in both Apple computers and Hayes modems.

Our Smartmodem 2400 and Smartmodem 1200 are also compatible with all versions of the Apple Macintosh, Macintosh SE and Macintosh II. There's even a specially bundled package for the Macintosh that contains a Smartmodem 1200, modem cables and Smartcom II. Software. Smartcom II is our award-winning software specially designed to take advantage of the power and graphics capabilities of the Macintosh.

Last but not least, there's another feature that Hayes 2400 and 1200 bps modems offer that will make them even more compatible with Apple computers, and that's a new low price.

New Products

Information on the Mac's latest software, hardware, and accessories

Edited by Eileen Drapiza

This section covers Macintosh products formally announced but not yet evaluated by *Macworld*. All prices are suggested retail. Please call vendors for information on availability.

SOFTWARE

ADS-Architecture, ADS-Electronics Symbol libraries for *MGMStation* CAD. Architectural symbols in ANSI standards and electronic and electrical design symbols. 512K min. memory. *ADS-Architecture* \$125, *ADS-Electronics* \$195. Compu-Arch, 213/281-5933.

AffiniFile Notes- and graphics-filing DA with autoindexing features. \$79.95. Affinity Microsystems, 303/442-4840 or 800/367-6771.

ArtDisk 1 & 2 Bit-mapped graphics. Vol. 1 includes files of buildings and landscapes; Vol. 2 includes files of people, animals, and birds. \$19.95 each. D.V. Franks, 919/848-9935 or 919/890-1256.

BAKERForms Four accounting packages for *Microsoft Works*. Accounts Payable package automatically balances checkbooks and prints checks; Payroll package generates payroll reports; Purchasing package prints purchase orders; Accounts Receivable package prints invoices and monthly statements. 512K min. memory. \$169.95 (\$49.95 each). Baker Graphics, 617/996-6739.

Business Class Customizable desktop travel planning tool that allows easy access to thousands of travel facts. Built-in phone interface. 512K min. memory; requires *HyperCard.* \$69.95. Activision, 415/960-0410.

Capps' Editor-construction kits for *Light-speedC* and *Lightspeed Pascal*. \$75.

Think Technologies, 617/275-4800 or 800/648-4465.

CoCoPro Estimates resources needed to complete software development projects. 512K min. memory. \$495. Iconix Software Engineering, 213/458-0092.

ERVision CASE tool for database design. Creates and edits entity-relationship diagrams. 512K min. memory. \$150. Andyne Computing, 613/548-4355.

Fastback Hard disk backup/restore utility. Backs up 10MB hard disk in less than 10 minutes; recovers data from damaged backup disks. 512K min. memory. \$99.95. Fifth Generation Systems, 714/553-0111 or 800/225-2775.

Focal Point Customizable time- and information-management system. 512K min. memory; requires *HyperCard*. \$99.95. Activision, 415/960-0410.

Graham Speller Spelling checker DA. Checks words as you type, with 75,000-word dictionary and 25,000-word thesaurus. 512KE min. memory. \$33.95. Graham Software, 303/422-0757.

Mac II Tools Disk for MacForth Extension set for *MacForth Plus*. Includes 68020 assembler and floating-point coprocessor. Supports color. 1MB min. memory. \$79. Creative Solutions, 301/984-0262 or 800/367-8465.

MacAtlas Professional Version Clip-art collection with more than 60 PICT-format U.S. maps showing country, state, and county borders. \$199. MicroMaps, 609/397-1611.

MacCOGO Determines geometric/structural shape properties. 512K min. memory. \$95. Erez Anzel Software, 416/738-4601.

MacOilie Geo-utility program performs math computations commonly used in petroleum industry. 128K min. memory. \$39. No phone number listed. Old Aulachogen Software, P.O. Box 23264, Oklahoma City, OK 73123.

Mac the Knife 4 and 5 Mac the Knife 4: An Orchestra of Fonts is a two-disk set of 30 different ImageWriter text fonts. Mac the Knife 5: People, Places, and Things is a two-disk set of clip art. 128K min. memory. \$49.95. Miles Computing, 818/341-1411.

MathView Professional Performs wide range of math functions. Includes multi-dimensional function evaluation, plotting surfaces in 3-D, matrix operations, and operations on ordinary differential equations. 512KE min. memory. \$249.95. BrainPower, 818/884-6911.

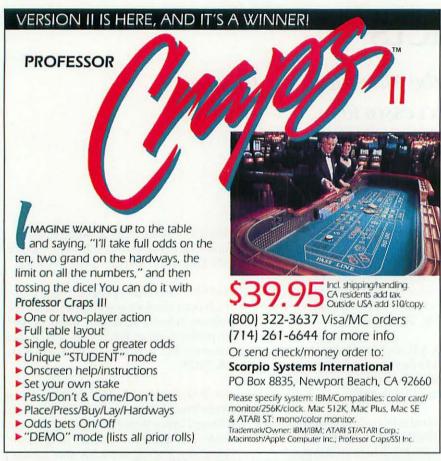
Nord and Bert Couldn't Make Head or Tail of It Interactive fiction. Player must restore order in a town by deciphering messages full of double meanings and word trickery. 128K min. memory. \$39.95. Infocom, 617/492-6000.

PowerDisk and PowerUp DA disk-cache utility and hard disk optimizer. \$59.95 each. Software Power, 415/490-6086.

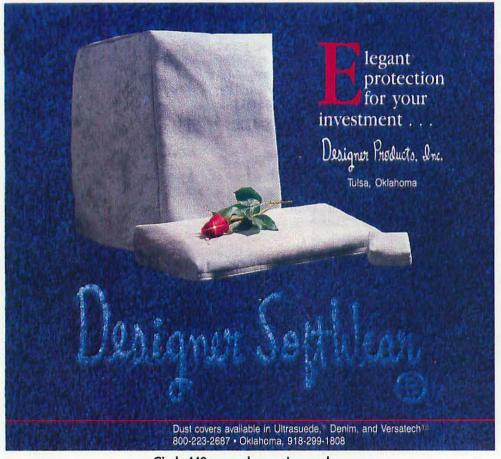
Prospect Plus Prioritizes prospects, prints mailing labels, and exports for mail merge. 512KE min. memory. \$275 with *4th Dimension Runtime*, \$195 without. cti software, 512/343-8255.

QUED/M Macro editor, text database manager, appointment calendar, and general

(continues)



Circle 418 on reader service card



Circle 443 on reader service card

New Products

productivity tool. 512K min. memory. \$119. Paragon Concepts, 619/481-1477 or 800/922-2993.

QuicKeys Utility that assigns commands or actions to keystrokes. 512KE min. memory. \$99.95. CE Software, 515/224-1995.

Scrabble Virgin Games' electronic version of the word game. Four playing levels; eight-player limit; player can compete against seven computer-generated opponents. 512K min. memory. \$39.95. Electronic Arts, 415/571-7171.

Suitcase Utility that lets you use uninstalled DAs and fonts. 512K min. memory. \$59.95. Software Supply, 408/749-9311.

SciFonts/LogiFont/ElectroFonts Bit-mapped fonts for printing with ImageWriter or LaserWriter. SciFonts consists of symbols, characters, and fonts for science and math applications. LogiFont contains symbols for logic circuits and diagrams. Electro-Fonts includes all this, plus standard analog circuit symbols. \$50, \$40, and \$99, respectively. Paragon Concepts, 619/481-1477.

The Holy Bible, Digitized Entire Bible on computer. All verses, including any quotation or group of words, can be displayed or printed in seconds. 512K min. memory. \$195. Polygon Industries, 504/486-2154.

The NightWatch Password protection for hard disks. 512KE min. memory. \$149.95. Kent Marsh Ltd., 800/325-3587 or 713/623-8618 in Texas.

Timeslips III DA time- and expense-tracking and professional billing system with a 2000-character description field. 512K min. memory. \$199.95. North Edge Software, 617/468-7358.

TOPS Terminal Enables Macs to communicate with machines on TCP/IP-based networks. 512K min. memory. Centram Systems West, 415/549-5900.

HARDWARE

AppleFax Modem Desktop-size modem provides bidirectional link to facsimile machines anywhere. Compatible with Group 2 and 3 machines. 1MB min. memory. \$699. Apple Computer, 408/996-1010.

(continues)

NOWAPPEARING ON IBM SCREENS EVERYWHERE.

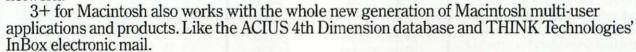
It used to be that Macintoshes and PCs were like oil and water.

But 3+ for Macintosh changes that. As the newest member of our 3+ network software family, it's the first product to integrate both Apple and IBM networking standards on one server. Not to mention the first network product other than Apple's to adhere to the new Macintosh standards.

For you, this means another significant first:

genuine transparency.

Now your Macintosh and PC files can actually reside in the same Macintosh folder and PC directory. And coexist with AppleShare servers on the same network.



Better still, you enjoy more network services than anywhere else. Like network administration right from your Macintosh. Connectivity to Ethernet, Token Ring,

and AppleTalk networks. Electronic mail gateways to MCI Mail and DISOSS systems. And internetworking and remote capabilities that allow you to grow your network as big and powerful as you want.

That's why you should call 1-800-NET-3Com for your

nearest 3Com dealer.

After all, when it comes to networks, 3+ for Macintosh is the only one that truly passes the screen test.



3+Mail for Macintosh integrates Macintoshes and PCs into a complete electronic mail system. 3Com®
WORKGROUP SYSTEMS

© 1987 3Com Corporation. 3Com, 3+ and 3+Mail are registered trademarks and Workgroup Systems is a trademark of 3Com Corporation. Apple, AppleTalk and Macintosh are registered trademarks and AppleShare is a trademark of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corporation. Ethernet is a registered trademark of Xerox Corporation. ACIUS and 4th Dimension are trademarks of ACIUS, Inc. THINK Technologies and InBox are trademarks of THINK Technologies, Inc. MCI Mail is a registered service mark of MCI Communications Corporation. 3+Mail for Macintosh available at year end.

If We Didn't Build MicahDrives Better We Wouldn't Back Them 8 Times Longer!

Hard drives from the new Micah are made to the highest standards of any drives for the Macintosh". That's why we offer a full 2 year limited warranty—8 times the industry standard and double the warranty given by virtually every other hard disk manufacturer.

Compare Micah's Construction

- Automatic mechanical park & lock of drive heads on shut down.
- Exclusive shock mounting of the drive assembly.
- The ability to withstand bangs & bumps up to 65 g's (operational) and 160 g's (non-operational) without failure.
- Superior air flow for longer life.
- All external drives fit directly underneath the Mac, taking up no additional space and increasing height by 3".
- Internal drives are designed for installation by the user on all Macs from the 512 up to the Macintosh II".

Micah Drives are sold and supported directly by the manufacturer for complete reliability, after-the-sale support and maximum value. After you've compared our construction, extras, prices and warranty you'll see why Micah is the hard decision that's easy to make.

External Micah Drives	
XT20 - 20 MB	\$649
XT30 - 30 MB	\$839
XT40 - 40 MB	\$999
XT60 - 60 MB	\$1199
XT100 - 100 MB	\$1699
XT150 - 150 MB	\$2399
Internal Micah	Drives
AT20 - 20 MB	\$649
AT30 - 30 MB	\$839
AT40 - 40 MB	\$899
AT60 - 60 MB	\$1159
AT100 - 100 MB	\$1549*
AT150 - 150 MB	\$199*
AT220 - 220 MB	\$3599*
AT310 - 300 MB	\$4999*

Compare Micah's Extras

- "Plug & Play" right out of the box: drives are shipped with all parts and cables No hidden costs or extras needed.
- All drives are fully formatted and tested at the factory and shipped with the latest System and Finder.
- Exclusive Micah Manager' software is included for formatting/initialization, high performance partitioning, encryption and back-up/restore.
- Designed to add to the value and productivity of your computer, not to simply replace an existing drive. On the Macintosh SE™ that means you can have two floppies and an internal hard disk up to 60 MB. On the Macintosh II™ you can add up to 310 MB of additional internal storage while still keeping the floppy drive and the original Apple hard drive.

Visa, MasterCard and American Express accepted at no extra charge.

FX10 – 10 MB Floppy Drive with removable cartridge \$999

Order before January 1st and receive three 10 MB cartridges

Micah's guarantee of satisfaction: If you're not satisfied for any reason within the first 30 days we will refund the price of the drive.

To order or for more information call toll free

1-800-782-0097

If busy or calling from Delaware 302-731-0430 Facsimile 914-779-2849



56 Worral Drive Newark, Delaware 19711



New Products

EMAC MD2400 External 300/1200/2400-baud modem with built-in speakerphone. Compatible with CCITT V.22bis international standard. \$499. Everex, 415/498-1111.

EMAC 20D, 40D, 60T, F\$100 20D and 40D are 20MB and 40MB external hard disks; 60T is 60MB tape drive; F\$100 is file server with 260MB hard disk and built-in 60MB tape backup system. \$995, \$1295, \$1395, and \$13,995, respectively. Everex, 415/498-1111.

ExpanSE, ExpanSE II Expansion chassis systems for Mac SE. ExpanSE increases SE to four slots. ExpanSE II also allows SE to use Mac II cards. \$995 and \$1195, respectively. Second Wave, Inc., 512/335-9283.

EyeSaver 14-in. paper-white screen monitor with twice the viewing area of Mac Plus or SE. Resolution equal to that of Mac. \$395. ProApp, 714/855-9088.

Galaxy LS Large-screen monitor adapter board that plugs directly into the Orion Accelerator board. \$495. MacPeak Systems, 512/327-3211.

GPIB-PRL 8-bit micro-based IEEE-488 bus to parallel (Centronics) bus converter. Includes integrated DMA controller and 64K memory buffer (expandable to 256K). \$495, \$695 for 256K version. National Instruments, 800/531-4742, 512/250-9119, 800/433-3488 in Texas.

Grappler C/MAC/GS Universal parallel printer interface. Provides serial-to-parallel conversion with built-in emulation code and disk-based print utilities. \$99. Orange Micro, 714/779-2772.

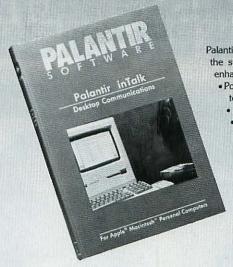
JDL-850 GL + Plotter/printer for producing color plots up to 18 by 24 in. Compatible with H-P Graphics Language. \$3845. JDL, 805/495-3374.

Machroma C2 14-in. color monitor with 640- by 480-pixel resolution (926 by 580 with future video cards). Includes built-in audio speaker, line jack, volume control, headphone jack. \$895. 4SITE, 408/425-8700.

MacStack 20-, 40- and 80MB hard disk that fits under Mac. Features 1.5MB-per-second data-transfer rate. Automatic head parking. SD20 \$795, SD40 \$1495, SD80 \$1795. CMS Enhancements, 714/259-9555.

(continues)

Telecommunications for Macintosh



We cordially invite you to the Fall Comdex 1987 Show. All of Palantir's Microsoft Windows applications and Macintosh software will be presented at the Palantir booth #197 in the Main Hall.

Macintosh inTalk® Version 3.0

Palantir's inTalk Version 3.0 for the Macintosh continues to set the standard for state-of-the-art communications. Latest enhancements include:

- Powerful Script Language (now provides greater user-ease to build Mac interfaces with mainframe software)
 - Digital PBX Data Network Support
 - · Built-in Text Editor
 - Terminal Emulation (enhanced through new access to mainframe Function Keys)
 - File Transfers (binary file modification)
 - · Works on New Mac SE & Mac II
 - Support for High-speed Modems
 - · Supports International Character Set
 - · Supports New Macintosh Keyboard
 - **inTalk October 1986 demonstrated its capability to operate with high speed modems by transferring a 12 page document between California and Japan in four minutes and 35 seconds. inTalk — power communications!

For More Information Contact Your Dealer.



12777 JONES ROAD, SUITE 100, HOUSTON, TEXAS 77070 (713) 955-8880

Circle 775 on reader service card

MacTilt

People who use MacTilt are crazy about it — here's why:

provides silky smooth tilt and swivel adjustment

- raises the Mac 4" for more comfortable viewing and operation
- mounts your external drive or vertical hard disk to save space
- for Mac Plus, Mac 512k, Mac 128k





MacTilt SE®

A professional workstation for the Macintosh SE

- · added height reduces eve, neck and back strain
- saves desk space
- mounting clips assure stability, allow easy removal

1621 E. 79th Street • Minneapolis, MN 55420

TLX 4310015 • (612) 854-9116 • 800-328-9839

Circle 676 on reader service card

Occeptories to ONE OF THE MOST ANNOYING FEATURES OF BIG SCREENS.



With the price of most largescreen monitors hovering in the \$2,000 range, we thought we'd do something a little radical with ours.

Like knock a grand off. Ah, you say, but at only \$995. what can one possibly expect from the 15" Hi-Top™ Full Page Display (besides change back from your thousand?)

How about everything? Start with a unique Macintosh™ clip-on connector board that's so easy to install you can do it for yourself. In all of fifteen minutes. Add dualscreen software that lets the Hi-Top work in concert with your Mac (whether it's the 512K, Plus or SE), so you can drag windows and palettes and desk accessories from one screen to the other.

Add screen resolution of 77 dpi (with a 720 x 900 display), for crystal clear

viewing from edge to edge.

And a footprint that takes up only two-thirds the space of that other, more well-known Full Page Display – but adds tilt-and-swivel positioning, to boot.

A warranty, that lasts a full year. And a service organization - Xerox that stands behind it.

All for only \$995. Ah, you may be thinking, but what's the catch?

The catch is that you've got to order before December 1st. After that, the price goes up to \$1,395 at your local dealer. So just call (212) 995-2224 or (415) 467-8411 and have your VISA or MasterCard ready

(COD orders are available too). We'll have your Hi-Top delivered right to your door within two weeks.

What could be less annoying?

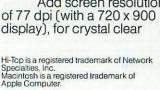
THE HI-TOP MONITOR



Network Specialties, Inc. Apple Certified Developers

Network Specialties' Hi-Top Full Page Display, 20" Stretch Screen Monitor, and Stretch-A-Sketch LCD Projector available at computer dealers worldwide.

Circle 366 on reader service card



New Products

MatchMaker Interface card and software that allow IBM PC to transfer data to and from Mac disks. Requires Mac external drive. \$149. MicroSolutions Computer Products, 815/756-3411.

MegaChip Memory expansion SIMM modules. 2MB of RAM per set. 100 percent compatible with future enhancements. \$895. Hard & Soft, 305/772-0430.

MES Mac-based entertainment and information vending system with choice of 12 different entertainment and personal enrichment programs. \$6500; includes Mac Plus and modem. IntelliSports, 513/232-8212.

OuterCircle External SCSI hard disks for current line of Macs. Each includes utility, diagnostic, and backup software. 20MB \$789, 45MB \$1079. Hard & Soft, 305/772-0430.

PC-385 Bar-code reader for SE and Mac II. Functions transparently with other ADB devices. \$795. TPS Electronics, 415/856-6833.

Plus-Spooler 68008-based print spooler with 512K RAM. Two-emulator design allows it to receive data from Mac and send data to LaserWriter at same time. \$995; for hard disk systems, \$795. MacPeak Systems, 512/327-3211.

ProApp 40SEi 40MB internal hard disk for Mac SE. Can be installed without removing a floppy disk drive. Automatic head parking. \$1295. ProApp, 714/855-9088.

QuickShare Provides IBM PC XT/AT with a Mac-compatible SCSI port. Allows file transfer between systems and sharing of PC storage devices. 512KE min. memory. \$465. Compatible Systems, 303/444-7220.

SlideWriter Digital film recorder for producing full-color, high-resolution 35mm slides. Compatible with PICT file format. \$11,795. Matrix, 914/365-0190.

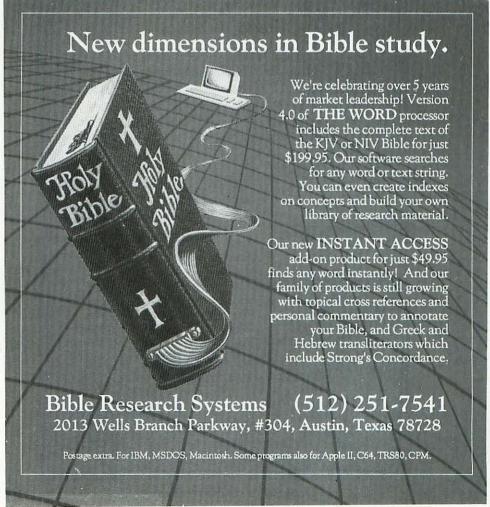
TapeStack Portable 40MB tape backup subsystem with streaming and file-by-file backup and restore capabilities. Compatible with Mac Plus, SE, and II. \$995. CMS Enhancements, 714/259-9555.

Thomson 4375M UltraScan 14-in. multiscanning color monitor for Mac II, with up to

(continues)

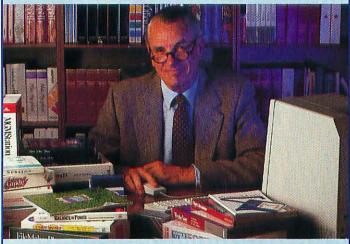


Circle 592 on reader service card





It's Like Having An UNCLE In The SOFTWARE Business!



Software is expensive. So why take chances? Choose from our vast Mac Library and TRY IT FIRST. Join our thousands of satisfied customers . . . just call us and tell us what you want. We'll treat you like family.

SOFTWARE FOR RENT

Over 800 Titles Available Including:

Chessmaster 2000 8.99	Ragtime 53.77
Dinner at Eight 8.99	Smartcom II 19.40
Easy 3D 19.80	Spanish Grammar 8.99
Family Heritage 24.75	Spellswell 9.89
Full Paint 13.19	Statview 512+ 47.91
Isgur Portfolio 29.99	Stella 59.2
Japanese Clip Art (ea.) 12.99	SuperSpool 8.99
LaserPaint 68.06	True BASIC
Leather Goddesses 8.99	Turbo Maccountant 62.69
MacASM Macroassembler 18.75	100's More Just Call & Ask
MacMoney 12,18	
MacProof 29.25	SUPER SALE
Memorandum 14.94	CMS 40MB Internal/SE 1014
MiniCad 3.0 81.19	Sony Disks SS/1.05 DS/1.58
Multiuser Helix 95.50	Ribbons/2.95 Multicolor/10.99
my Disk Labeler 8.99	PowerMath 2.0 63.44
Plot-lt 16.88	MacOpener TM (tool) 14.30
PowerMath 2.0 13.79	Volksmodem 1200 129.77
Quick & Dirty 1 or 2 (ea.) 8.99	Aztec C68K-c v.1.06I 325

TRY IT FIRST

RENTAL APPLIES TO PURCHASE

Orders Only

Customer Service or In Texas

1-800-847-5775

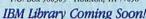
(713) 529-1100



SOFTWARE LIBRARY

P.O. Box 980305 • Houston, TX 77098

IBM Library Coming Soon!





Circle 629 on reader service card

New Products

800- by 560-pixel resolution. Includes tiltand-swivel stand. \$895. Thomson Consumer Products, 800/325-0464, 800/237-9483 in California.

Totem II 920 20MB removable Bernoulli storage subsystem. Includes backup and restore software. \$1195. Bering Industries, 408/438-8779.

TSI-020 12-MHz 68020-based accelerator board for Mac 512KE and Plus. Upgradable to 16, 20, or 24 MHz. \$595 with no memory; \$895 with 1MB RAM. Call for prices on custom configurations of up to 24 MHz with 4MB RAM. Total Systems Integration, 503/345-7395 or 800/874-2288.

ACCESSORIES

DSM804 Four-way data switch with 8-pin mini DIN connectors. Enables users to attach four peripherals to one Mac or four Macs to one peripheral. \$59.95. Data Spec, 818/993-1202.

Graphic Window Transparent screen overlay marked with columns and lines to create masters for often-used forms. \$14.95. Graphic Window, 201/767-5886.

Mac II Workstation Shelf for the CPU, plus a radial arm that suspends monitor above desktop. \$499.95. Ergotron, 612/854-9116, 800/328-9839.

MacDaydreams Computer-generated calendar. Incorporates technology from MacPaint to Mac II 3-D graphics. \$10.95. Publishing Ink, 818/500-7857.

Multicolor Mac Inker Automatic reinker for multicolor ribbons. \$80; adapter for existing Universal Mac Inker Base, \$42. Computer Friends, 503/626-2291.

VisiMac Plexiglass display case designed to replace outer chassis of all Mac models. Not FCC approved. \$279. Hard & Soft, 305/772-0430. □

To have your product considered for inclusion in New Products, send an announcement with product name, description, minimum memory, peripberals required, pricing, company name, and phone number to New Products Editor, Macworld, 501 Second St., San Francisco, CA 94107. We reserve the right to edit press releases.

THE ONLY DRIVE WITH THE GUTS TO CΔRRY Δ 5-YEΔR WΔRRΔNTY!

If you're as concerned about your computer systems' long-term reliability as we are, then you'll want the only drive with the guts to carry a 5-year warranty.

One that won't compromise

your data files or your system.
We know how critically important a hard

disk is to you and your system. That's why Conner Peripherals' new, exclusive 5-year limited



every part of every 40 megabyte (formatted) high-performance 3½-inch hard disk drive we make (with either an embedded PC/AT®-compatible or SCSI controller), from the day each drive is shipped.

How can we offer such a warranty? After thoroughly testing, monitoring and tracking our first 100,000 drives, we now have the data to support a true 30,000 hour MTBF.

The next generation of higher performance computers require the most reliable disk drives ever built. If you agree, demand the only drives with the guts to carry a 5-year warranty; Conner Peripherals.

Call us today for more information.
The disk drive industry will never be the same.

EDNNER PERIPHERALS



Keep your business ng true to form

FileMaker Plus. The data base and forms manager from Nashoba Systems.

The winner of top awards from both MacUser and Macworld is now the top-selling data base manager for the Macintosh." And for good reasons.

FileMaker® Plus is the first product for the Macintosh to combine professional data base management with the ability to produce professional quality forms.

FileMaker Plus makes it easy to quickly create any type of form you want: number-heavy forms like invoices, purchase orders and expense reports; and text-heavy forms like contracts and form letters. You can arrange drawings, photos, text, numbers, logos, and dates anywhere on the page for maximum impact, then preview what you've done on the screen to make sure it's exactly what you want. FileMaker Plus even includes templates for creating mailing labels, proposals, and Rolodex*cards.

FileMaker Plus makes managing your data base just as easy. It automatically indexes every word, number and date you enter. You can look up pricing information and quickly calculate, sort, and summarize your invoices, automate your sales reports, produce contact lists, form letters, and mailing labels. All from the same data, without retyping. You can also exchange information with other applications, like Microsoft* Word, Excel, MacWrite, MacPaint, and MacDraw to help you share information and formats.

And FileMaker Plus is on friendly terms with the entire Macintosh family, including the Macintosh 512K, Macintosh Plus, Macintosh SE as well as the Macintosh II, the ImageWriter* II and LaserWriter* Plus, and the latest system software, such as MultiFinder* and

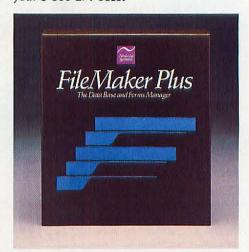
AppleShare."

Nashoba Systems is just as committed to FileMaker Plus today as we were when we first developed it. We'll continue to do all the things that have made it such a success: listen to our customers, provide outstanding free technical support, upgrade our product with the most advanced technology in an easily accessible form, and assure your satisfaction

with our money-back guarantee.*

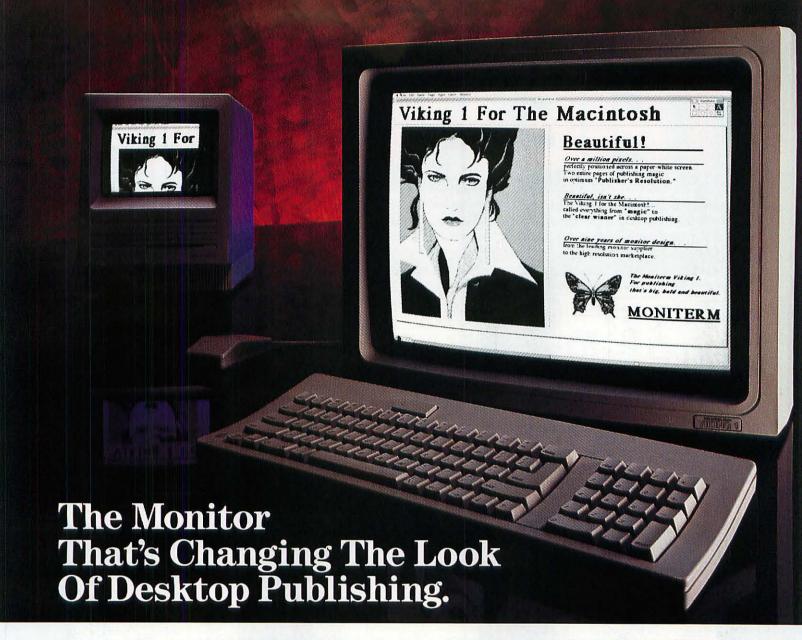
FileMaker Plus from Nashoba Systems. For only \$295, it keeps your business running in top form.

Call us today for the dealer nearest you. 1-800-274-0610.



© 1987 Nashoba Systems, Inc. FileMaker is a registered trademark of Nashoba Systems, Inc. ImageWriter, LaserWriter and MacWrite are registered trademarks of Apple Computer, Inc. AppleShare, MacDraw, Macintosh, MacPaint and MultiFinder are trademarks of Apple Computer, Inc. Microsoft is a registered trademark of Microsoft Corporation. Rolodex is a registered trademark of finsileo. 'Money-back guarantee is available for thirty days from date of purchase. Details available upon request.

Circle 72 on reader service card



Introducing the 19-inch Viking 1 for the Macintosh™ SE.

The critics have praised the Viking 1 as "magic"* and "the clear winner"** for desktop publishing on the PC. Now this exciting new monitor is about to change the look of desktop publishing on the Macintosh.

Here's why:

Introducing "Publishing Resolution.""
The Viking Is 19-inch screen allows for a full two-page layout. Its ultra-high 1280 x 960-pixel resolution provides a precise, tack-sharp image—unlike lower-resolution monitors that make it tough to read the fine print. Or higher-resolution monitors that create letters too tiny and fuzzy to read. And the Viking I's unique square pixels assure that screen and laser-printer characters match perfectly.

Eliminates Flicker.

Some monitors have an annoying flicker that can frazzle your nerves. The Viking 1's exceptional non-interlaced 66 Hz refresh rate provides rock-solid stability.

Fast Screen Update.

With over a million pixels, screen updating can get sluggish on some monitors. The Viking 1 accelerates screen update by avoiding processor wait states.

Gets Your SE Involved.

With most large-screen monitors, your Macintosh is turned off-or just a repository for surplus windows and toolboxes. With the Viking I, your Mac SE can serve as a 7x 11-inch scrollable extension to the large-screen image. Or "roam and zoom" in the large-screen image, zooming in at two levels of "fat bits" magnification of whatever the cursor is pointing to.

IBM® Compatibility.

The Viking 1 is the only monitor that's compatible with both the Macintosh SE and the entire IBM line of PC/XT/AT and PS/2 computers. So you can stay flexible and grow.

Spend A Minute With Moniterm.

That's all it takes to *really* visualize the benefits of the **Viking 1**. For a screening, contact the dealer in your area, or return this card for more information.



Name _______Company _______Street ______City _____State ____Zip

Dealer Inquiries Wanted.

Tel. No.

MONITERM

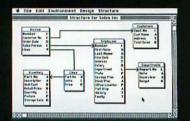
Moniterm Corporation 5740 Green Circle Drive Minnetonka, MN 55343 (612) 935-4151 TELEX-753626 FAX-(612)933-5701

^{*}Jim Seymour, PC Week **Jim Felici, Publish!

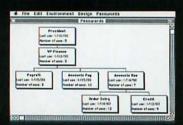
YOU NEED

THE POWER

4th DIMENSION" is a multi-user relational database for Macintosh" that provides more power than any other database for a personal computer. For first-time users, it is a database that can start simple and grow. For power users, it is a flexible data management system and programming environment. For consultants and programmers, it is an application development tool to create custom databases.



Structure containing files, fields and links



Hierarchical password system



Custom variable types and formats



Object-oriented layout tools



Built-in business graphics

Commission	Hensber #1	THE RESERVE	-0.
Menca	Rene	Presedures	$\neg \neg$
Sie Seperiments Employees Meaus Utilities	Service Indifference Service and Floring Priority Francist Emerce Experiment	Aphilope Phologic Phologic Children Children	3
Keybaard:			

Menu and item editor



Data entry screen



Flowchart or listing programming



Completed personalized database

searches

SPECIFICATIONS

necorus	OP TO 18 ITHINO
Files	99 at a time
Fields	511 per file
Links	Unlimited
Subfiles	511 per file
Subfields	511 per subfile
Layouts	Up to 32,000
Passwords	32 000 levels

FUNCTIONS

Multi-user	Fully compatible with AppleShare® and other HFS fileservers
Import/Export Data	SYLK, DIF, and text with serial port and file communication control
Search/Sort	Multiple conditions, ad hoc queries, wildcard, and programmable s
Quick Reports	Instant report generation
Business Graphics	8 kinds of graphs (pie, bar, column, etc. plus custom pictures)
Programming	Over 200 built-in commands and operators
External Routines	Add external routines written in Pascal, C, and other languages
Customization	Custom menus, check boxes, radio buttons, and dialog boxes

Send us a check for \$20 or call (408) 748-7575 with your credit card to receive a demo version of 4th DIMENSION.



20300 Stevens Creek Blvd. Suite 495 Cupertino, CA 95014 (408) 252-4444



Getting Started with PostScript

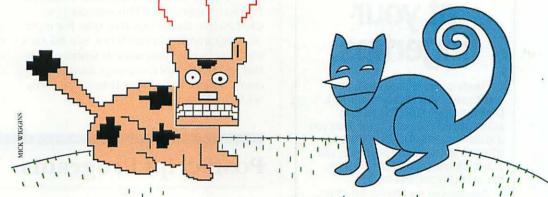
Understanding page-description languages, how the Mac uses PostScript, and how to speak the LaserWriter's mother tongue

by Jim Heid

Your boss is no smarter than you are, yet you're treated like a peripheral in the office. You sit in a corner, biding your time, waiting for the boss to bark. When the orders finally arrive, you go into action—assimilating data, making decisions, crunching numbers, and turning out a finished product that makes the boss look stellar. What's in it for you? All the paper you can eat and a new toner cartridge now and then.

It's a good thing LaserWriters haven't unionized, or they might demand the attention they deserve. Sure, it was the Mac's graphics and friendly personality that sparked the desktop publishing revolution. But it's the LaserWriter and other laser printers, driven by Adobe Systems' Post-Script, that have fueled the fire.

What is PostScript? To most Laser-Writer users, it's air: unseen and unheard, but indispensable. Technically, PostScript is a programming language-a vocabulary of English-like keywords that combine with math symbols and other operators to make up programs that perform a given task. With an all-purpose programming language like BASIC or Pascal, the task might be a game, an accounting program, or a word processor. With PostScript, the result is a document produced by an output device—a laser printer or a phototypesetter. PostScript is a page-description language, a specialized dialect whose vocabulary is tightly focused on the task of describing the appearance and position of text and graphics in a document.



PostScript's Place

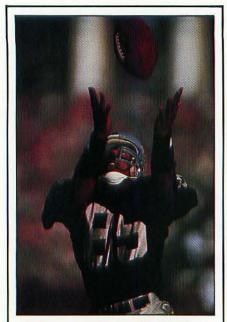
Page-description languages are a recent development, inspired by the burgeoning capabilities of computer printers and the increasing demands of their users. PostScript was born in 1982 at Adobe Systems, under the guidance of founders Charles Geschke and John Warnock. Before founding Adobe they developed a page-description language similar to PostScript, called InterPress, at Xerox's Palo Alto Research Center—the research and development lab where many of the Mac's mouse, window, and menu concepts were first tested.

PostScript lives in the part of a laser printer called the *controller*. The controller accepts instructions and data from the Mac, interprets them, and then controls the printer's *engine*, which produces the hard copy. This controlling process involves directing the pulsing of the printer's laser as it scribes a series of fine parallel lines across a photosensitive drum. The lines—300 per inch on LaserWriter-class printers—

are similar to the scan lines visible upon close examination of the screen of a computer or television. Indeed, the images on a video screen and a page of laser printer output are actually close cousins, both made of scan lines produced by a *raster* controller. Acronym buffs often call laser printer controllers *RIPs*, short for raster image processors.

All laser printers have controllers, but not all controllers use page-description languages. Many laser printers, including the best-selling Hewlett-Packard LaserJet series, accept orders in the form of less flexible *control codes*. A control code is a special character sequence sent by the computer that tells a printer, "Don't print this; treat it as a command instead." Some control codes tell the printer to switch to bold or underlined type, or to a different

(continues)



Put the NFL at your fingertips.

Hands-on pro football excitement is as close as your keyboard with NFL Challenge from XOR. This exciting, action-packed computer game gives you updatable rosters of all 28 NFL teams, offensive and defensive playbooks, and true-to-life realism with penalties, injuries, substitutions, and more!

Operating on the IBM PC, PC-XT,PC-AT, and their compatibles as well as the Apple Macintosh, **NFL Challenge** puts you at the heart of the action as you select the starting lineups, drive downfield against the clock, and go head-to-head against the league's most innovative offenses and formidable defenses.

Kick off your home season with this software classic now at your local computer store. Or call 1-800-NFL-CHAL TOLL FREE. Be sure to check out PRO Challenge, Basketball Challenge, Oligopoly, and Bermuda Square, examples of some other First Class Software from XOR.



Circle 146 on reader service card

How To/Getting Started

font. Others may feed a sheet of paper, position text at a certain location, or draw a line on a page.

Control codes, also called escape codes, have been guiding print mechanisms for decades. They're fine for formatting the "letter quality" characters of a daisy wheel printer or electronic typewriter, and they're adequate for instructing a printer to switch from one font to another. But as a printer's capabilities increase, so do the number of control codes required to access them. If you're a controller designer, one solution is to add new control codes to accommodate new features-at the risk of creating a dizzyingly high number of control codes that could be obsolete when tomorrow's print engines arrive. A better solution is to start from scratch and design a printing-oriented language whose keywords can be combined in different ways to produce different results. That's the PostScript approach. (This introduction can't go into the technical details. For more on programming in PostScript, see Adobe's texts PostScript Language Reference Manual and PostScript Language Tutorial and Cookbook, both published in 1985 by Addison-Wesley.)

The Object Is the Game

PostScript is built on a foundation that gives it complete dominion over a printer's capabilities. One cornerstone of that foundation is a powerful set of *graphics operators*—programming routines that allow PostScript to rotate, enlarge, reduce, shade, chop, slice, and dice graphic images. Another is the basic premise that everything on a page, including text, is a graphic. That means anything PostScript can do to a picture, it can do to text. And the mortar holding it all together is an *object-oriented* approach that lets PostScript create images on everything from video screens to laser printers to phototypesetters.

Let's address that last point first. A few months ago, we looked at the differences between bit-mapped and object-oriented graphics (see "Getting Started with Macintosh Graphics," *Macworld*, August 1987). We saw then that a bit-mapped graphic such as a *MacPaint* picture is a series (a map) of bits in the Mac's memory, each corresponding to a dot on the screen. An object-oriented graphic like a *MacDraw* drawing, however, is stored as a series of

(continues)

PostScript Programs

Product	List Price	Company	Phone
Graphics, Type Design	R* 2 3(1*77 C-01)		
Adobe Illustrator	\$495	Adobe Systems, Inc.	415/961-4400
Cricket Draw	\$295	Cricket Software, Inc.	215/251-9890
Fontographer	\$395	Altsys Corporation	214/424-4888
LaserFX	\$195	Postcraft International	818/718-1598
			416/641-0678 (Canada)
.aserPaint	\$495	LaserWare, Inc.	800/367-6898
			415/453-9500
Fonts			
Adobe Type Library	\$185 per package (four typefaces)	Adobe Systems, Inc.	415/961-4400
Allotype Fonts Library	\$40-\$160	Allotype Typographics	313/663-1989
ClickArt LaserLetters	\$79.95 per package	T/Maker Company	415/962-0195
Fluent Laser Fonts	\$69.95 per volume	CasadyWare, Inc.	800/331-4321
	The second second second	A STATE OF THE PARTY OF THE PAR	800/851-1986 (CA)
Laser fonts	\$34.95-\$44.95	Century Software, Inc.	415/549-1901
Laser fonts	\$99.95-\$149.95	Linguists' Software	617/468-3037

QUALITY, NOT COST

Macintosh™ Enhancements from OPEN MAC Enterprises

MASS STORAGE

INTERNAL DRIVES		EXTERNAL DRIVES	
For Macintosh SE,I OME 45i- 45 Megabytes	\$999 . 95	OME 45x- 45 Megabytes OME 100x- 100 Megabytes-	\$1199.95 \$1799.95
For Macintosh II OME 100i- 100 Megabytes OME 140i- 140 Megabytes	\$1599.95 \$1999.95	OME 140x- 140 Megabytes SCSI Mac- SCSI interface for the 512e	\$2199.95 \$99.95

ALL OPEN MAC DRIVES INCLUDE:

- ☐ 110/220V Power
- □ 28 millesecond average access time
- ONE YEAR WARRANTY
- ☐ FREE STACKWARE, Microsoft_® Excel, and Works Templates by Heizer Software.
- ☐ Utility Software

ALL OPEN MAC EXTERNAL DRIVES INCLUDE:

- ☐ External SCSI Address Switch
- ☐ 2 Extra Switched Power Outlets
- ☐ Power Line Filtering
- ☐ Front Mounted Power Switch

30 DAY MONEY BACK GUARANTEE!

VIDEO

MEMORY

2 YEAR WARRANTY

For Macintosh Plus

RamPlus 2 \$349

Expands to 2 Megabytes RAM
RamPlus 4 \$849

Expands to 4 Megabytes RAM

NOTE: The RamPlus series may not be physically compatible with some internal devices.

For Macintosh Plus, SE

Ram II \$599 Expands to 2.5 Megabytes RAM

Ram IIs \$649

Expands to 2.5 Megabytes RAM, Surface Mounted

NEW!

Mac II to TV!!
Limited Quantity \$599

Composite Video for Macintosh, Plus, SE

VA Plus \$99.95 VA SE \$149.95

VideoEx \$99.95

Expands your Mac II to 256 Colors

For Macintosh Plus, SE, II

Ram II+II \$999

Four 1 Megabyte SIMMs (DIP Mount)

Ram II+IIs \$1099

Four 1 Megabyte SIMMs (Surface Mount)

NOTE: Due to space considerations surface mount is recommended for the Macintosh SE

Education & Government Orders Encouraged FAX: 415/686-4244

OPEN MAC Enterprises 415/682-0440

2280 Bates Avenue, Suite J, Concord, CA 94520

Reseller Inquiries Invited

All OPEN MAC products:

- · Are manufactured by OPEN MAC Enterprises
- Are User Installable
- · Don't Void Manufacturer's Warranty
- · Carry a minimum 1 Year Warranty
- · Are stocked for rapid shipment

© 1987 O'EN MAC Enterprises. RemPlus, Ramill, Ramill-II, VA Plus, VA SE, Reliant 45,100, and 140 are trademarks of Open Mac Enterprises. Microsoft is a registered trademark of Microsoft Computer II.



YOUR MACTM

WITH



CALL TO ORDER

800-772-4536

IN OHIO 216-631-4214

RIBBON INKERS

Pay Only \$49 For A Lifetime Ribbon Supply!

Don't throw away used ribbons when you only use up the ink. Bede Tech inkers re-ink ribbons over and over for just pennies each time! Print quality surpasses new ribbons – and gets better with each re-inking.

FREE 4-oz. bottle of black ink lasts 50-100 re-inkings. FREE Ink Roller & Roller Cover

Inker Kit for ImageWriter Printers
Reg. \$67 Value \$49.00

Inker Kit for Epson Printers
Reg. \$71.50 Value \$52.95

INK AND RIBBONS

Black Ink, 4 oz. bottle
Black Ink, Pint
ImageWriter Ribbons, Uninked
ImageWriter Ribbons, Inked
Colored Ink, Multi-Color Ribbons Call



KEYBOARD COVERS

Protect keyboards from spills and dust.

MAC and MAC PLUS Beige Hard Covers

MEW MAC SE and MAC II Platinum

Hard Covers

Specify standard or extended keyboards.

Bede Tech Bonus. Mac Keyboard Command Reference Charts printed inside each cover. Reg. \$17.50 Value BEDE TECH DIRECT \$9.95

HARD-TO-FIND MAC BATTERY

Inside the Mac and Mac Plus is a 4.5 volt battery that lasts about two years. Replace it before it dies or leaks inside your Mac. Reg. \$4.75 Value.

BEDE TECH DIRECT \$3.95

Circle 490 on reader service card

MOUSE PAD

Royal blue anti-static surface 9% x 7%. Call for additional colors. Reg. \$9.95 value.

BEDE TECH DIRECT \$5.95

• 24 Hour Shipment • 30 Day Money-Back Guarantee

· Free Catalog with Order

ITEM	QTY	PRICE	TOTAL
		s	_\$
		\$	_\$
			_\$
		\$	_\$
		\$	_\$
	Shipping	& Handling	\$ 2.00
Canada, Hawaii	, Alaska, C.O.D.,	S&H \$4.50	

7% Sales Tax (Ohio Residents Only) --TOTAL ORDER \$ -

☐ Check ☐ Money Order ☐ C.O.D.

☐ Check ☐ Money Order ☐ C.O.D.

☐ MasterCard ☐ Visa Exp Date —

Card No. _______Signature_____

NAME____

COMPANY.

CITY____

STATE _____



bede tech

Division, Bede Industries, Inc. Est 1976

8327 Clinton Road • Cleveland, OH 44144

ImageWriter is a trademark of, and Macintosh is a trademark licensed to Apple Computer, Inc. @1987 Bede Tech.



Specify White or New Wood-Grained style.

Save time and space when you store up to 50 or 100 disks in our stacking Disk Organizers. Sturdy 200 lb. test E-flute cdb.. dividers, lid.

3.5" DISK ORGANIZER \$7.45 Holds 100 disks 4/\$24.95

3.5" DESK TOP DISK ORGANIZER

SANIZER \$4.45 Holds 50 disks 4/\$14.95

51/4" FLOPPY DISK ORGANIZER \$5.45 Holds 100 disks 4/\$19.95

COMPACT DISK ORGANIZER \$3.95 Holds 50 C.D.s 4/\$13.95



CLIP ART

Bede Tech has digitized popular animal and plant illustrations to the Mac Paint format. You can use Mac Paint to modify these public domain illustrations. Or create your own fanciful creatures! Bede Tech Software is not copy protected.

Bede Tech Clip Art prints big, full page black and white illustrations 8½" x 11". Ideal for your business, school or organization. Or print in color with ImageWriter II.

The large size printout also makes Bede Tech Clip Art ideal for children to color with crayons and markers. Fun! Educational! Useful!

VOL I Dinosaurs, Dogs, Cats, Horses

VOL II Dinosaurs, Dogs, Cats, Horses

NEW VOL III Tropical Fish, Tropical Birds, Tropical Plants, Wild Flowers

NEW VOL IV More Dinosaurs, Small Animals, Oceanic Fish, Birds of America

BEDE TECH DIRECT \$1295 each

BEDE TECH BONUS

· FOURPAK VOL. 1-IV \$3995

NEW CHRISTMAS CLIP ART \$895

> Great Gift! Order Several! Limited Time Offer.



How To/Getting Started

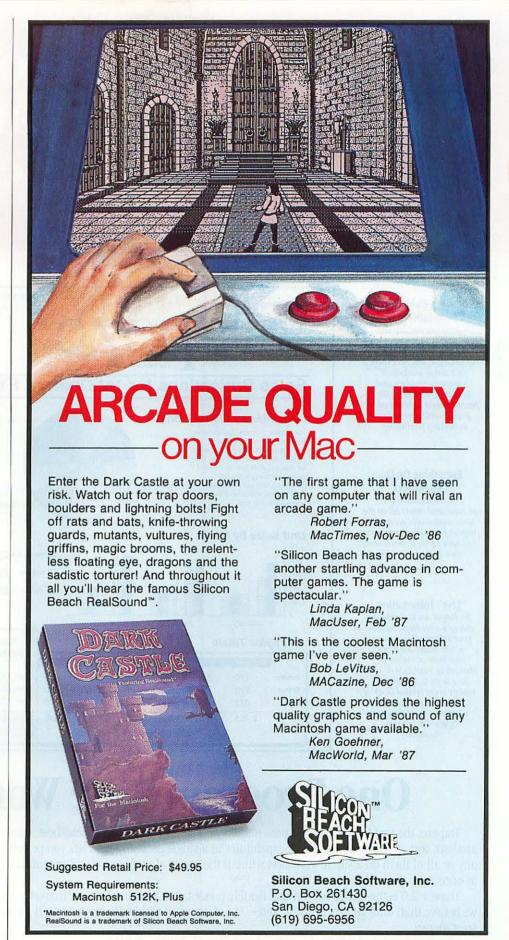
commands for QuickDraw, the Mac's builtin library of graphics routines. These commands describe each object's appearance, including its location, size, line thickness, and pattern. Because object-oriented drawings are stored as QuickDraw commands rather than as a fixed number of dots, they are *resolution independent*—they can take advantage of all the sharpness your printer has to offer. They aren't tied to the relatively coarse 72 dots-per-inch (dpi) resolution of the Mac's screen.

PostScript takes a similar route to resolution independence by acting as a middleman between the Mac and the printer's engine. A PostScript controller receives commands from the Mac that describe each object's location and appearance, interprets the commands, and then creates a bit-mapped image for the entire page in the printer's memory. Thus the Mac can remain blissfully ignorant of the printer's resolution; an image becomes tied to a fixed number of dots per inch only moments before it's printed, when its bit map is created in the printer's memory. (The one time this rule doesn't apply is when you're printing a MacPaint-type picture, whose resolution is already carved in the Mac's memory. That's why object-oriented programs like MacDraw give better results with laser printers.)

The biggest benefit of PostScript's resolution independence is that it frees the Mac from having to know how much resolution a given printer provides. That means you can use the same programs to print the same documents on a 300-dpi LaserWriter, a 600-dpi Varityper VT-600, a 1270-dpi Linotronic 100, or a 2540-dpi Linotronic 300. The only difference in output of each will be increasingly sharper images.

Well, almost. There can be some trials on the trail from LaserWriter to Linotronic. The most obvious is the appearance of gray shades, called *screens* in the printing trade. A screen comprises a group of dots; the more dots within a screen's area, the darker the shade of gray. On a LaserWriter, each dot is ½300 inch in diameter—the smallest dot that the printer's engine can produce. But a Linotronic 300 can create a dot ½540 inch in diameter. This size difference means that light screens print far lighter on a Linotronic than on a LaserWriter. Both devices are printing the same number of dots, but the size of those dots differs. Hairline

(continues)



Circle 266 on reader service card

"Trapeze allows you to do more things in one application than we have ever seen."

INFOWORLD JUNE 22, 1987

Desktop Publishing Quality

Trapeze lets you use any Macintosh on, style, size or color in any block of information, and mix them on a single worksheet.

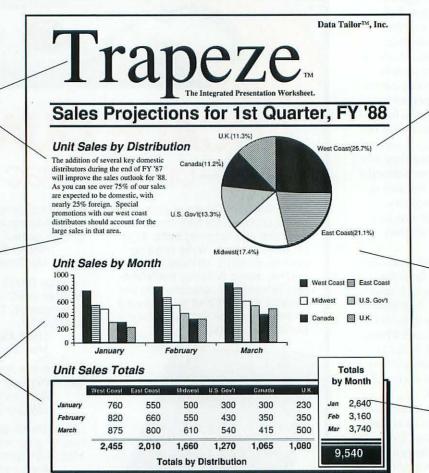
Combining graphics and layout capabilities with powerful data analysis adds a whole new dimension to desktop publishing.

Everything On One Worksheet

Put calculations, text, pictures and cbarts all on the same worksbeet – no need toimport from other programs. And bave up to 32 worksbeets open at the same time.

"Live" Information

No longer are last-minute changes a problem, because your information remains active. Make additions, deletions or "what-if" changes to your data as often as you wish. Trapeze will update every related block of information, including charts. No other program offers this powerful capability.



Flexible, Automatic Charting

Trapeze offers automatic charting functions which surpass even dedicated 'chart and graph' programs. Eleven basic chart types are built-in, with thousands of variations possible with a simple click or two of the mouse. And if your information changes, Trapeze updates all related

Power You Control

charts automatically.

No matter bow complex the data, Trapeze provides the powerful functions you need for analysis. Yet, you retain complete freedom to manipulate the information and its presentation.

Integrated Presentation Worksheet

The result is a clear, eyecatching representation of your information that can make the difference between selling your ideas and sitting on them. Only Trapeze gives you a presentation-quality worksheet in one, integrated program.

One Program. One Worksheet.

Trapeze: the first truly integrated presentation worksheet. It combines spreadsheet, data analysis, text, charting and graphics capabilities in a single program—and lets you perform any or all of them on a single worksheet without the hassle of juggling several programs at once

Trapeze 2.0 is the most powerful and flexible presentation worksheet on the market. And we believe that, once you try it, you'll agree. If not, return it within 30 days and we'll refund your money.

Visit your local dealer today for a demo or call us at 1-800-443-1022.



The Integrated Presentation Worksheet.

Data Tailor, Inc. 1300 S. University Drive Suite 409
Fort Worth, Texas 76107

Minimum system requirements: enhanced Macintosh 512K with 800K external drive. Runs on Macintosh versions 512e, Plus, SE and Mac II (in color!). Supports Laserwriter "and Imagewriter "I and II. (in color!). Ce 1987 Data Tallor, "Inc. Tapaze is a registered trademark of Data Tailor, Inc. Data Tailor and the Trapeze logo are trademarks of Data Tailor, Inc. All rights reserved. Macintosh, Laserwriter, and Imagewriter are trademarks of Apple Computer, Inc.®

Circle 662 on reader service card

How To/Getting Started

rules, which are one dot wide, are finer on a Linotronic for the same reason.

Also, some Linotronic users report problems with extremely complex pages' taxing the Linotronic's memory, even though the same pages may print on a LaserWriter without incident. That presents another potential compatibility wrinkle: even though PostScript is designed for device independence, situations can occur where a document that prints on one printer chokes another. One printer may lack fonts another one has, or may have less free memory than another. Linotronic veterans recommend printing test documents to verify font and memory compatibility. It's a lot harder to iron out compatibility wrinkles with a deadline staring you in the face.

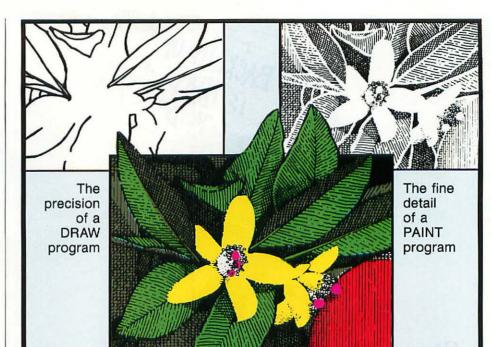
Language of a Thousand Faces

A variation on the object-oriented theme gives PostScript enough font finesse to make a type hound howl. In PostScript printers, fonts are stored as mathematical equations called outlines, which the controller can use to create characters of virtually any size. As an oversimplified example, instead of describing an uppercase T as an object ten dots high with a crossbar eight dots wide, PostScript describes it as an object whose crossbar is 20 percent shorter than its vertical stem. It's like a recipe that lists ingredients in proportions instead of measurements: the cook (the controller) can then use math to scale the final product to any size.

By describing fonts as outlines, Post-Script can use the same font description to create character bit maps in any size, from a barely visible one-point character up to, according to Adobe, a character the size of Rhode Island. (Naturally, you'd need a Texas-size printer for a cipher that size.) By contrast, the Mac's screen and Apple's ImageWriter printers use bit-mapped font descriptions and require a separate, diskconsuming description for each size. Many non-PostScript laser printers, including Hewlett-Packard's LaserJets, require bitmapped font descriptions, too.

Just as a cook can change the outcome of a dish by changing the proportions of its ingredients, a PostScript printer can change the look of a font by altering its proportions. As "Changing Proportions"

(continues)



Now combined in

Graphics for the Macintosh will never be the same again. Before it was paint or draw. One or the other. Now, nothing less than both will do. With SuperPaint, you can edit dot by dot in the PAINT layer and you can create and manipulate objects in the DRAW laver.

Until recently, paint programs only printed at 72 dpi. Now SuperPaint's unique LaserBits™



Suggested Retail Price: \$149.95

System Requirements: Macintosh 512K, Plus, XL (1 mb)

*Macintosh is a trademark licensed to Apple Computer, Inc. LaserBits is a trademark of Silicon Beach Software, Inc.

feature allows you to magnify and work on dots in the paint layer at an amazing 300 dpi resolution! These high resolution images can be pasted directly into your word processor or page layout program.

SuperPaint. When all you need is a masterpiece!

(compared to other paint programs) "SuperPaint is the clear winner and... MacPaint's heir apparent.

Adrian Mello, MacWorld, Jan '87

"SuperPaint is the hottest graphics package currently available." Bob LeVitus, MACazine, Jan '87

"Is SuperPaint really super? Absolutely.'

Sharon Aker, MacUser, Feb '87



Silicon Beach Software, Inc. P.O. Box 261430 San Diego, CA 92126 (619) 695-6956

Circle 266 on reader service card



Stop singing the same old song. DiskFit makes backing up easy.

With all that precious data on your hard disk, it certainly makes sense to back up regularly.

So why don't you? Because your current backup "solution" is so much trouble, you probably can't stand putting yourself through the torture.

Now, there's an easy way to end your backup blues -DiskFit"

DiskFit is automatic.

DiskFit manages the entire backup process so you don't have to. It scans your hard disk for files that need to be backed up. Then it deletes obsolete files from the backup disks and fits your new files - in standard Macintosh format - into the reclaimed space. Automatically. And DiskFit only asks for the disks it needs. DiskFit even formats your blank floppies, verifies the integrity of the backup, and generates a backup report.

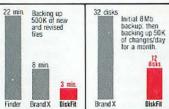
DiskFit is fast. A typical day's work is backed up to floppies in just about three minutes. Backing up from one hard disk to another is even faster.

DiskFit requires fewer backup disks.

Other programs are inefficient; they don't reclaim the space left by old files, so they require an ever-increasing number of disks each time you back up.

Not so with DiskFit.

It's smart, so your backup set grows only as much as your files do. And since no directory disk is required, you have nothing to lose. Even if you lose one of your backup disks, DiskFit will recreate it.



Without DiskFit, backing up a day's work can be so tedious you might be inclined to skip it altogether - and leave your data unprotected.

Unlike other back-

up programs, DiskFit's backup disks remain a manageable size even after months of incremental backups.

And for AppleShare™ - Network DiskFit.

Backing up becomes even more crucial when using shared volumes. If losing one person's data is bad, imagine losing an entire workgroup's. Network DiskFit is the only backup utility that restores Apple-Share folder ownership and access privilege information automatically, so the network administrator doesn't have to

Network DiskFit resides on the server volume; each user on the network can also back up their local hard disk as well as their files on the server.

Money back guarantee. We're so confident that DiskFit and Network DiskFit outperform your present backup system that if you are not completely satisfied, return your purchase to us within 30 days for a full refund.

Get DiskFit and stop singing the backup blues.

- \$74.95
- M Network DiskFit: \$395.00



295 N. Bernardo Avenue Mountain View, CA 94043 (415) 964-9694

System requirements: Macintosh 512, Plus, SE, or Macintosh II with one or more HFS-format hard disks.

AppleShare is a trademark of Apple Computer, Inc. © 1987 SuperMac Software.

How To/Getting Started

PostScript can create new typefaces by expanding and condensing existing ones. This is 14-point New Century Schoolbook in its original form.

PostScript can create new typefaces by expanding and condensing existing ones. This is 14-point **New Century** Schoolbook, expanded 30 percent.

PostScript can create new typefaces by expanding and condensing existing ones. This is 14-point New Century Schoolbook, condensed 30 percent.

Changing Proportions

Since PostScript fonts are described mathematically, a PostScript printer can expand or condense a font by making calculations, giving the font a new personality. Many desktop publishing programs, including XPress, ReadySetGo, and Scoop, can exploit this capability.

shows, fonts can assume different personalities when expanded (widened) or condensed (narrowed). And because Post-Script can apply its graphics-manipulation skills to text, PostScript printers can shade text, rotate it, print it in circles or along a wavy line, and even print text within text as in "A C of PostScript." (This illustration is based on one in Adobe's exemplary free newsletter, Colopbon, available by writing Adobe Systems, 1870 Embarcadero Rd., Palo Alto, CA 94303.)

Adobe knows that all the type-transformation talent in the world is worthless if your fonts are ugly to begin with. Its library includes nearly 150 of today's most beautiful typefaces, licensed from such titans of type as Mergenthaler and the International Typeface Corporation (ITC). Most Post-Script printers come with between 13 and 35 typefaces built into permanent memory chips (read-only memory, or ROM) and organized into families. For example, the

(continues)



up to 100 times faster. By boosting the speed of Macintosh applications, the Prodigy SE will save you thousands of hours and dollars. Prodigy SE plugs into the Macintosh SE's internal expansion

bus, and features specialized hardware options.

68020 processor boosts software speed Prodigy SE's true 32-bit, 16 MHz 68020 processor

effectively doubles the clock speed and data path of the Macintosh SE. Standard applications run 4-8 times faster, revolutionizing the productivity of desktop publishers, consultants and business users.

Math co-processor crunches numbers faster Calculation-intensive software runs up to 100

workstation for data analysis, CAD/CAM, software development and desktop engineering.

Ahead

Expandable RAM and **Memory Management**

Prodigy SE features one megabyte of RAM, and is expandable to 32 megabytes. The optional 68851 paged Memory Management unit provides the Macintosh with virtual memory capabilities pre-

viously available only on mini or mainframe computers.

The complete system from a single source As an authorized Apple® VAR, Levco provides completely bundled Macintosh systems, authorized Apple service and product warranty.

NOW AVAILABLE FROM



Authorized Value Added Reseller

Macintosh and Macintosh SE are trademarks of Apple Computer Inc.

MiniCad™

Let Others Speak for Us

Computer Graphics:

"MiniCad even beats AutoCAD.. it combines 2D and 3D features in one package.. a sophisticated 2D and 3D drafting program that is clearly intended for the professional CAD user."

CAD/CAM Journal:

"A major contendor in the Macintosh CAD marketplace.... MiniCad offers enormous functions for the price."

Graphic Perspective:

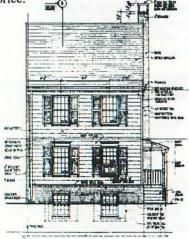
"MiniCad... is a wonderful example of one of those pieces of software that slips onto the scene unannounced, quietly surpassing all similar programs that break in on the market with a huge splash."

Personal Publishing:

"MiniCad bridges the gap between everyday drawing applications and professional CAD programs, and it combines the best of both."

MacWorld:

"MiniCad achevies an ideal balance of simplicity and capability.. Don't let the name fool you.. there is nothing "mini" about MiniCad except the price."



Priced at only \$495.00

MiniCadTM

is developed and produced by

Diehl Graphsoft Inc.

8370 Court Ave. Suite 202 Ellicott City, Md. 21043 301-461-9488

Circle 634 on reader service card

How To/Getting Started

LaserWriter's Times family comprises four typefaces: Times Roman, Times Italic, Times Bold, and Times Bold Italic.

You can supplement a printer's ROMbased fonts with downloadable fonts, whose outlines are stored on a floppy or hard disk and downloaded into the printer's memory as needed (see "Font Facts," Macworld, February 1987). A LaserWriter contains enough memory to hold three or four downloadable typefaces; higherperformance LaserWriter alternatives like QMS's PS-800 Plus and Texas Instruments' OmniLaser 2108 have more memory and can hold roughly twice as many. (See "Laser Wars," Macworld, June 1987, for reviews of several LaserWriter alternatives and for details on PostScript shopping considerations. The Texas Instruments 2108 printer is reviewed in September's Reviews section; watch for the upcoming review of the Varityper VT-600.)

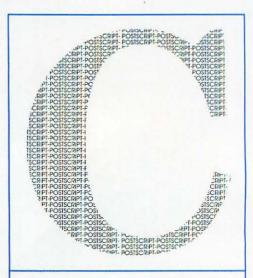
The Price of Power

The calculations involved in translating font outlines and interpreting graphics commands could keep a Mac busy for some time. A printer equipped for Post-Script, however, contains impressive computing hardware that liberates the Mac from much of that math. In a LaserWriter Plus, a 68000 microprocessor presides over 1.5 megabytes of memory, two-thirds of which is required to hold a full-page, 300dpi bit map. Another megabyte of ROM holds the PostScript interpreter and builtin fonts, while a cast of supporting chips manages communications between Mac and controller, and between controller and engine. Prior to the Mac II's introduction, people joked that the LaserWriter Plus was Apple's most powerful computer. They weren't entirely wrong.

These smarts free the Mac from grappling with the myriad calculations necessary to describe a complex image. They're also the reason why PostScript printers cost so much. (For example, QMS's non-Post-Script KISS printer is a bare-bones laser printer designed to be a fast, quiet alternative to a letter quality office printer. It uses the same identical Canon-built print engine as the LaserWriter Plus, but costs less than \$2000.)

To make their purchase less painful, PostScript printers contain print server software that lets up to 32 Macs on an AppleTalk network share one printer. Serv-

(continues)



200 400 translate /Roman /AvantGarde-Book findfont 6 scalefont def /Bold /NewCenturySchlbk-Bold findfont 300 scalefont def

(POSTSCRIPT-POSTSCRIPT-POSTSCRIPT-POSTSCRIPT-POSTSCRIPT-POSTSCRIPT-POSTSCRIPT) def

/crlf 1 currentpoint 6 sub exch pop 0 exch moveto | def

/prtstring {strg show crlf } def

/Background { 150 | prtstring | repeat } def

gsave

newpath 0 0 moveto 8 setflat Bold setfont (C) true charpath clip

0 350 moveto Roman setfont Background

grestore

showpage

A C of PostScript

PostScript can "clip" text to fit within an arbitrary shape. This custom patterned C is the result of the PostScript program shown.

Portable, reliable power for the Macintosh Plus

How small is the BackPac 40[™]? See for yourself...

For those of you who were unable to visit Jasmine at MacWorld Expo in Boston and exclaim "I didn't realize it was *so thin*!" we'd like to provide you with the opportunity to do so now. We worked hard at Jasmine to integrate proven technology into such an extraordinarily small, light and convenient package. As quiet in operation as the Macintosh Plus itself, BackPac 40 offers you the convenience and portability of an internal hard disk with the reliability and ease of installation of an external hard disk.

Specifications — Size: 9"x 9"x 1½" thick Weight: less than 3 pounds Access time: 29 milliseconds Power supply: 10 watts



Power switch for · · · · BackPac 40 & Mac Plus

Mac power cord plugs in here

SCSLconnecto

BackPac 40 comes pre-formatted and works right out of the box.

It is very easy to install with no dangling cords or cables. Once installed, BackPac 40 can be left in place permanently or removed at any time. The combined Macintosh Plus and BackPac 40 slips into a standard Macintosh carrying case.

To Order Call (415) 621-4339 BackPac 40 - \$1299(\$1339 Visa/MasterCard)

Our prices include 30 Day Trial/Money Back Guarantee, and Full One Year Warranty!

Dealers/Developers: call for pricing.

Simple installation

- 1 Remove Mac power cord.
- 2 Remove battery door and place in storage receptacle.
- 3 Remove 2 lower screws with tool provided. Place in storage receptacle.
- 4 Snap BackPac 40 and SCSI connector into place on Macintosh Plus
- 5 Tighten BackPac 40 fasteners with coin.
- 6 Plug Mac power cord into BackPac 40.

(Shown actual size)

7 Power up Mac and BackPac 40.



Everything in its place— Convenient storage bas been provided on the inner panel for installation tool, two screus, and battery door from your Mac.

BackPac Features:

- · Silent, efficient: No fan required.
- · Doesn't void Mac warranty.
- Daisy chain up to 6 SCSI devices.
- Back-up software plus 9 MB of free shareware & public domain software.



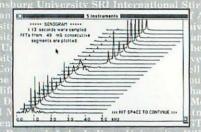
Jasmine Technologies, Inc. 555 De Haro Street, San Francisco, CA 94107

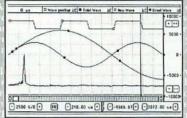
Every drive is shipped with a technical hotline number to answer any questions. BackPac 40 and Jasmine are trademarks of Jasmine Technologies, Inc. Product specifications and prices are subject to change. Prices do not include shipping, CA sales tax (6.5%) or special rush handling. Apple is a registered trademark of, and Macintosh Plus is a trademark licensed to Apple Computer, Inc.

Circle 112 on reader service card

They Chose Caralle Data Acquisition on the Macintosh

Performance that Challenges the Minis





. with ease-of-use challenged by no one. MacADIOS systems from GW Instruments include advanced hardware interfaces and extensive software options for all Macintosh models. Programming control from BASIC, C, Pascal or FORTRAN, plus powerful "no programming" application software. Unprecedented 833 KHz sampling rate on the Macintosh II!



W Instruments, Inc. (617)625-4096 P.O. Box 2145 Cambridge, MA 02141

The Macintosh Data Acquisition Company

Circle 791 on reader service card



Connect your peripheral to the Mac, MacPlus. Mac SE, or Mac II with a custom molded cable. Anco has a wide range of experience building cables and accessories-custom and standard for the Macintosh family.

Anco has cables for every application including:

- Printers
- Networking
- · Plotters
- Digitizers
- Modems
- · Disk Drives
- · Keyboards
- · SCSI Drives

Mouse

· Other PC's

Anco's cables meet Apple's standards and incorporate our own Mini-din connector, the new platinum color, are shielded to FCC Class B specifications and meet UL2464 requirements.

OEM's, VAR's and Distributors, call us for a list of our standard Mac and SCSI products.



Anco Electronics, Inc. 9852 Crescent Center Drive Rancho Cucamonga, CA 91730

415-967-0293 • 714-945-1365

Circle 278 on reader service card

How To/Getting Started

er software lets a printer listen for print requests from any machine on a network and take care of them on a first-come, firstserved basis. Non-PostScript printers generally lack server software; multiple machines can share them only if you buy splitter boxes and server software.

Despite having its own microprocessor and a good head for figures, a Post-Script printer can seem slow at times. Documents containing large or complex graphics can bog down the controller. Documents using numerous fonts can fill the printer's font cache, an area of memory that holds the bit maps for characters that have already been printed on a page. In such cases, the controller must purge the character bit maps it has laboriously created, then create the new ones it needs. If the purged characters are needed again, the controller must start over again with the font's outlines.

PostScript and Macs

To access a PostScript printer, the Mac needs two system files, LaserPrep and LaserWriter. The LaserWriter file is a printer driver that tells the Mac how to access a PostScript printer. The LaserPrep file is a PostScript dictionary that the Mac transmits to the printer at the beginning of the first job you print after starting the printer-it's what's being sent when the Mac displays the "Status: initializing printer" message.

LaserPrep actually adds new commands to the PostScript language that allow it to work with the LaserWriter driver, which sends not standard PostScript commands but a special, pseudo-PostScript "shorthand" that takes less time to transmit and is more compatible with QuickDraw. In essence, LaserPrep takes the printer aside and whispers, "Listen. We Macs use PostScript a bit differently. Here's what we do "These extensions to the PostScript language remain in the printer's memory until it's shut off, which is why you only see the "initializing printer" message during the first print job of the day.

The LaserPrep and LaserWriter files may be all the Mac needs to access a Post-Script printer, but it takes a special breed of program to plumb the depths of Post-Script's power. Cricket Software's Cricket Draw, for example, is an object-oriented drawing program that exploits PostScript's ability to print text along a wavy path and

(continues)



DO NOT ATTEMPT WITHOUT COMPUSERVE.

Get all the facts as fast as the experts do before you try to tame the market.

Without accurate, up-to-the-minute data you can easily get taken for a ride on Wall Street. That's why it's important to get your hands on CompuServe. The fastest, most reliable source of comprehensive financial data available.

Now, just like Wall Street's most prestigious firms, you can check out a tip or find a hot, money-making lead in a matter of seconds. Investigate any area of interest. Or scan CompuServe's financial news highlights to find new areas to investigate. Including...

Continuously updated quotes on over 10,000 issues.

MicroQuote II—12 years of daily historical prices, along with dividends, splits, distributions and interest payments on more than 90,000 stocks, bonds, mutual funds, options, foreign exchange rates and hundreds of market indexes.

Graph trends quickly online. Review your portfolio performance, investigate returns in bull and bear markets. Screen for stocks to buy, or transfer prices and dividends to your microcomputer for detailed analysis.

Standard & Poor's descriptive information on over 3,000 companies.

Value Line Data Base II—extensive, fundamental data for analyzing the performances of over 1,800 major corporations.

Disclosure II - descriptive and financial information from the SEC filings and annual reports of over 8,500 companies.

Institutional Broker's Estimate System (I/B/E/S)—earnings projections from top research analysts on over 3,000 widely followed companies.

You can also research technical market trends, review economic projections and high-powered market analyses. Get expert advice on retirement, financial planning, managed accounts, taxes and insurance. Evaluate your own portfolio, even connect to a variety of at-home banking and brokerage services.

Circle 330 on reader service card

And all this comes with CompuServe's base of news, weather, telecommunications, special interest and entertainment services.

Compare CompuServe's rates to the cost of expensive floppy-based sources. Compare our up-to-the-minute delivery to time-consuming publication research. Compare the depth and breadth of our virtually infinite databases to any other source of investment information.

Then see your nearest computer dealer for a CompuServe Subscription Kit. Suggested retail price is only \$39.95 and includes \$25 of online time.

For more information or to order direct, call or write:

CompuServe*

Information Services P.O. Box 20212 5000 Arlington Centre Blvd. Columbus, OH 43220

800-848-8199



How To/Getting Started

create stunning shading effects (see "Rounding the Bezier Curve," Macworld, May 1987, and "Mac Graphics Tools," Macworld, August 1987). Altsys Corporation's Fontographer lets you modify existing PostScript fonts (to add, for example, special characters, or to create symbols) or design entirely new ones. Postcraft International's LaserFX lets you apply any of 30 different effects to text. Then there's Illustrator, Adobe's own hotline to PostScript's power (see "Illustrator: The Tracer's Edge," Macworld, June 1987).

With Illustrator, you create line-oriented illustrations by drawing sequences of straight and curved line segments called paths. You can trace pasted-in or scanned bit-mapped images, draw from scratch, or create special typographic effects based on PostScript fonts. Illustrator translates your efforts into a PostScript program that you can send to a printer or save in a variety of formats for inclusion in other documents.

Many desktop publishing and word processing programs let you incorporate PostScript effects created with the programs listed above. Several methods exist for including PostScript effects in other

documents, but the most useful are Encapsulated PostScript (EPS) files and the special PICT files that Cricket Draw creates. These two types of files have technical differences, but both provide the same advantage: they store the PostScript programming statements the printer needs to create an effect, as well as QuickDraw commands that let the Mac approximate the effect on screen. In an EPS file, one part of the file contains PostScript statements and another part contains the QuickDraw commands. Cricket Draw's PICT format stores the PostScript statements needed to create an effect along with the QuickDraw commands that all PICT-format files contain. (See the August 1987 Getting Started for information on PICT and other graphics file formats.) With Cricket Draw's approach, you can include effects in programs that don't support EPS files, such as Microsoft Word.

The common denominator between these programs is that they're "PostScript aware." Their output contains instructions that go straight to the heart of a PostScript controller, instead of being simple bitmapped images or QuickDraw commands. Apple is discouraging the development of such PostScript-dependent products, partly

because they can be incompatible with non-PostScript printers such as General Computer's QuickDraw-based Personal LaserPrinter (PLP), and also because they strengthen the bond between the Mac and PostScript. That's a bond Apple doesn't want to become too strong, since Apple, too, has a QuickDraw-based laser printer in the wings.

Considering QuickDraw

If you're laser printer shopping, you'll need to decide between a printer built around PostScript or one that uses Quick-Draw. "PostScript versus Non-PostScript" lists ten points of comparison that may help. For more insights on QuickDraw printing, see "The QuickDraw Solution," Macworld, September 1987.

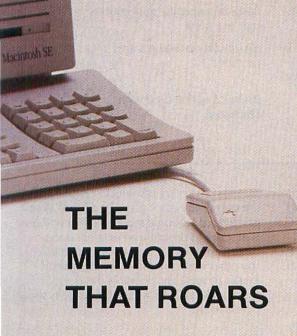
The dawn of QuickDraw laser printing doesn't mean dusk for PostScript. Post-Script has gained unstoppable momentum in the past few years. Over a dozen printer manufacturers are selling or developing PostScript devices. Over 300 programs for Macs, IBM PCs, and mainframe computers support it. And as PostScript printers prolif-

(continues)











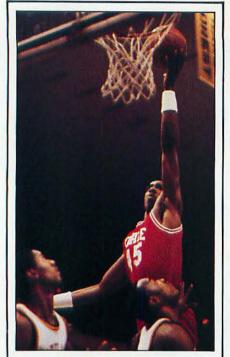
Available at: Heath/Zenith Computers & Electronics Centers

YOUR TRUE GIGABYTE MASS MEMORY SOLUTION

NuDATA

3206 Scott Blvd. Santa Clara, CA 95054 (408) 727-1049 (800) 8-DATA-NU

Circle 736 on reader service card



You call the shots with Basketball Challenge[™]

Not only can you call the shots, but you can also set the offense, select the defensive set, determine the tempo for the game, and make substitutions in this real time, five-on-five college basketball simulation game from XOR Corporation.

Select from 20 teams, add your coaching ability, and see how many victories you can chalk up in your win column. Operating on the IBM PC, PC-XT, PC-AT, and their compatibles as well as the Apple Macintosh, **Basketball Challenge** puts you at the heart of the action with the pressures and tensions of real life coaching situations.

Pick up your copy of Basketball
Challenge at your local computer store today. Or call 1-800-635-2425 TOLL
FREE. And be sure to check out NFL
Challenge, PRO Challenge, Oligopoly, and Bermuda Square, examples of some other First Class Software from XOR.



Circle 265 on reader service card

PostScript versus Non-PostScript

Here's a quick look at the differences between PostScript laser printers and General Computer Company's Personal Laser Printer; the only QuickDraw laser printer so far released that includes outline fonts.

PostScript

Processing occurs in printer, requiring complex controller but freeing Mac for other tasks

Many font outlines stored in printer's ROM

Spoolers can be used to regain control of the Mac sooner

Printer can be shared by up to 32 Macs

Large selection of fonts

Controller can shadow text and print along an irregular path

LaserWriters make nearly ideal proofing printers for Linotronic output

Can use applications that generate PostScript effects

Most PostScript printers can also emulate other printers, such as Diablo 630 daisy wheel

Printer can be used with other PostScript-supporting computers

Non-PostScript

Processing occurs in Macintosh, allowing simpler, less expensive controller, but requiring extensive memory and disk space

All font outlines stored on required Macintosh hard disk

Spoolers are ineffective since data isn't sent to printer until page is described in the Mac

No built-in sharing capabilities

Font selection currently limited

Shadowed text, the ability to print text along an irregular path, and some other effects currently not available

Spacing of some fonts may not match PostScript counterparts, making proofs less accurate

PostScript-specific applications may not work

No emulation features are provided

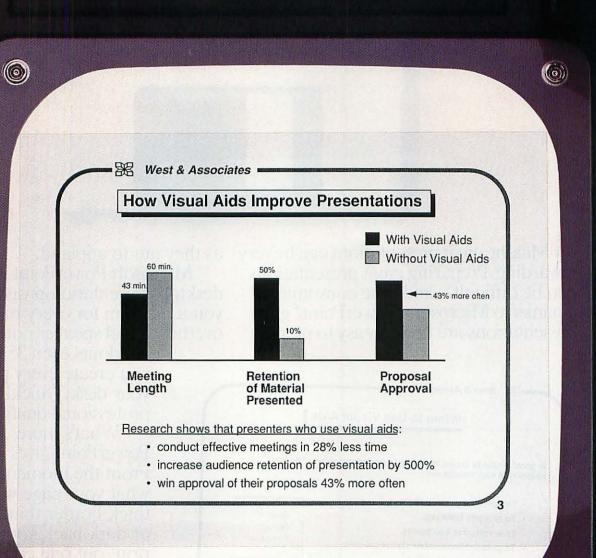
Printer must be used with Macintosh

erate and the price of their memory chips drops, the cost-chasm between "personal" laser printers and a PostScript printer could shrink to a hairline crack. AST Research has recently announced the TurboLaser/PS, a LaserWriter Plus-compatible printer that, at \$3995, will be the cheapest PostScript printer yet.

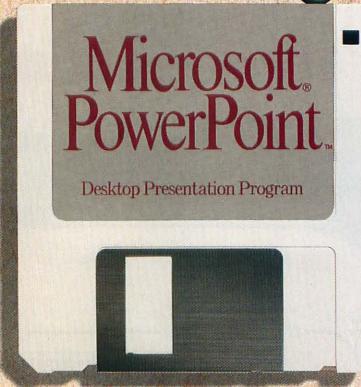
You may also see PostScript in the video circuitry of tomorrow's computers, whose programs could use its device-independent qualities to create images on

screens of varying resolutions. Also around the corner are color printers, as well as sophisticated facsimile machines that will use PostScript to describe an original document's appearance and all but clone it at the other end of the line. PostScript will evolve to meet the needs of the devices that speak it. That's what a language is supposed to do. \square

A strong argument for increasing your overhead.



Presenting:



Making great presentations can be very rewarding. Preparing great presentations can be difficult—and time consuming. Thanks to Microsoft® PowerPoint,™ great presentations are now as easy to prepare

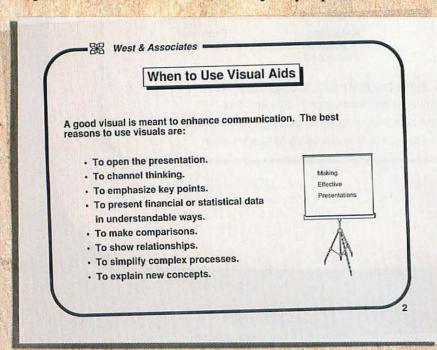
as they are to applaud.

Microsoft PowerPoint is the complete desktop presentation program that gives you a medium for every message. From overheads and speaker notes, to audience

handouts, even 35mm slides. And you create every piece—right at your desk. Quickly. Easily. With professional-quality results.

What's more, Microsoft
PowerPoint gives you control.
From the moment you decide
what your page will look like—
thick border, thin border, light
or dark background—until you
print out one consistentlyformatted overhead after another

Microsoft PowerPoint's builtin word processor and drawing tools give you everything you need to prepare great looking overheads or 35mm slides. And you can make them look even better by integrating sophisticate



Microsoft PowerPoint's design and word processing capabilities make it easy to communicate your points powerfully.

graphics, charts or illustrations from other Macintosh™ programs like Microsoft Excel. Or, take advantage of previous presentations or company slide libraries which instantly adapt to your current format.

If your presentation is ready but not in the right order, our convenient Slide Sorter

File Edit View Siple Tent Grow Line Pattern Window

Serktop Presentation

Service Presentation

Serktop Presentation

Serktop Presentation

Service Presen

PowerPoint's unique slide sorter lets you preview your complete presentation and easily rearrange it.

feature lets you rearrange your presentation slide-by-slide with a click of the mouse. And once you have your presentation in the correct order, PowerPoint's

Slide Show feature turns your Macintosh into a projector, so you can rehearse your presentation by viewing it a slide at a time.

Last minute changes? No sweat. With Microsoft PowerPoint you can make changes to your presentation right up to the last minute. Or quickly update last year's five-year plan into this year's five-year plan. Remember how much last minute changes used to cost? Or how frantic overnight jobs were? Never again.

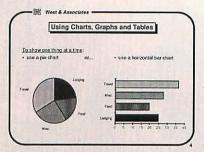
When you're finally ready to print, Microsoft PowerPoint gives you all the visual support you need. Overhead transparencies and 35mm slides. Speaker Notes. And audience handouts. All from the original files you've created.

If you'd like to trade outside suppliers for internal control, rush charges for a one time investment, if you'd like to be more effective making presentations, call (800) 541-1261, Dept. A65. Ask where you can buy Microsoft PowerPoint.

Looking good shouldn't be a lot of work.

Microsoft PowerPoint

West & Associates



Notes:

Both pie charts and horizontal bar charts are used to show comparisons at a point in time.

Pie Charts

- show items as a fraction of the whole.
- emphasize key items by "exploding" a pie slice.

Bar Charts

- show items relative to each other.
- emphasize key items with shading.

Effective Presentations

4

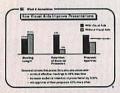
November 30, 1987

PowerPoint makes it easy to create notes for your presentation, so you won't forget the important details.

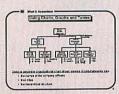
West & Associates











The state of the s

Effective Presentations

November 30, 1987

Now you don't have to throw together audience handouts at the last minute. PowerPoint makes them automatically.



Get the lion's share online with GEnie.

66GEnie changed my mind about what an online service can do for me! I always knew that GEnie offered a princely selection of Special Interest Groups featuring thousands of software files, dynamic bulletin boards, lively discussions and "tips" from the experts. But now GEnie gives me more than my share of valuable information services like NewsGrid and USA Today Decisionlines, American Airlines EAASY SABRESM personal reservation system, new and exciting multi-player games and access to Dow Jones News/Retrieval.® And the people on B.A. King GEnie are so friendly and helpful they make me feel like a member of royalty!

You don't need to pay a king's ransom to get the lion's share, because only GEnie offers you so much online, for less."

Services Available	Compare	Pricing*			
Electronic Mail • CB • SIGs/User Groups	હ	Registration	Monthly	Non-prime	Time Rates
	Save	Save Fee	Minimum	3(X) band	1200 baud
• Travel • Shopping • Finance • Reference	GEnie†	\$29.95*	None	\$5.00	\$5.00
Professional • Leisure	CompuServe	\$39.95	None	\$6.00	\$12.50
Games • News	Other	\$49.95	\$10.00	\$8.40	\$10.80

*\$18 Registration fee extended to 12/31/87.

Just \$5 per hour. Get online today!

- 1. Have your major credit card or checking account number ready.
- 2. Set your modem for local echo (half duplex)-300 or 1200 baud.
- 3. Dial 1-800-638-8369. When connected, enter HHH
- 4. At the U# = prompt enterXJM11827, GEnie then RETURN.

Need help or more information? No modem yet? We can help. In U.S. or Canada call 1-800-638-9636.



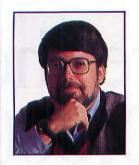


GE Information Services

©1987 General Electric Company, U.S.A.

*Basic rates and services in effect 9/87 apply in U.S. only. †Non-prime time rates apply Mon.-Fri. 6 PM-8 AM local time and all day Sat., Sun., and nat'l. holidays. Subject to service availability. Some services offered on GEnie may include additional charges.

Dow Jones News/Retrieval is a registered service mark of Dow Jones & Company, Inc.



Business Clinic

Putting HyperCard to work managing your To Do list

With this issue Danny Goodman begins a new problem-solving column designed to belp you work more efficiently with the Mac. This month be demonstrates a practical application for HyperCard. Next month be'll show bow to transfer infor-

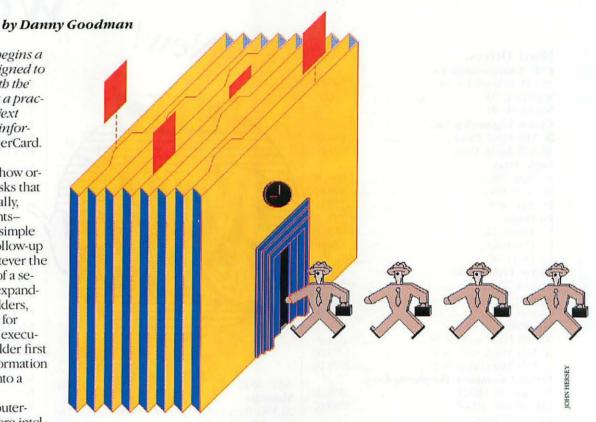
mation from a database into HyperCard.

Over the years, I've observed how organized executives follow up on tasks that require action at a future date. Usually, these busy people-or their assistantskeep track of commitments with a simple prompting system. Some call it a follow-up file; others call it a tickler file. Whatever the name, the system usually consists of a series of file folders or one of those expandable, partitioned portfolios. The folders, organized by date, hold reminders for tasks that must be performed. The executive or assistant checks the day's folder first thing every morning. Typically, information from the various reminders goes into a To Do list for the day.

The system works, but a computerized version can be quicker and more intelligent—quicker by generating the To Do list automatically, more intelligent by flagging unfinished items from previous days. My version, called the Tickler, shows how to put the much-talked-about *HyperCard* to work saving steps for you. You'll need to know how to get around in *HyperCard*, but that's easy to learn from its online Help stack or from its documentation. I've used only art and icon buttons that come with *HyperCard* so that you can reproduce the look of this example.

Basic Structure

The Tickler is a single *HyperCard* stack consisting of two similar but distinct backgrounds (see "A HyperCard Glossary").



Only one card has the first background: this To Do card presents a list of all items for the current day and any unfinished items from previous days (see "To Do List"). The other background is for the Reminder cards, which hold details about tasks to be completed in the future (see "Reminders"). Create the To Do card first so that it becomes the first card in the stack—and thus the one that appears whenever the stack opens. This card contains 4 background fields and 17 background buttons. With this many buttons, you do no typing on the To Do card in the finished application, only button pressing.

A guided tour of the To Do card demonstrates how it works. Only three of the background fields show up on the To Do card. The Date field shows the day and date, and the 12 blank lines in the Actions

field take up most of the rest of the card. To the right of Actions are a dozen small blanks that make up the field called Done; a script connected to the locked field automatically fills in a check mark when you click.

A fourth (hidden) field, called Links, makes the connections between the To Do items and their Reminder cards. To create the hidden field, start by making a new background field. Its size and location are not critical. Name it Links, and then type hide field "Links" into the Message Box. That's all there is to it.

(continues)

To Mac users, we're the To more than 400,000 we're an

## Comparison		
Pro-43 Internal for SE	Hard Drives.	
MacStack 40. Call Ehman Engineering Inc. 699.00 20 MB Hard Drive 699.00 40 MB Hard Drive 1029.00 Logic Array ProApp 20S 699.00 ProApp 30S 899.00 ProApp 40S 1199.00 Lo Down 100 1099.00 Lo Down 30 1099.00 Molicror Technologies 1599.00 Magnet 20 699.00 Magnet 30 799.00 Magnet 40 1049.00 Mountain 20 MB Hard with SCSI 899.00 40 MB Hard with SCSI 2599.00 Personal Computer Peripherals Corp. MacBottom HD21 859.00 MacBottom HD45 1299.00 Floppy Drives. Mirror Technologies Magnum 800K External 209.00 Monitors. Mega Graphics Megascreen Video System 1699.00 Network Specialties 1599.00 Stretch Screen 20" 1599.00 Memory Boards. 129.00 MacSnap 548 369.00	CMS Enhancements Inc.	
MacStack 30. Call Ehman Engineering Inc. 699.00 20 MB Hard Drive 699.00 40 MB Hard Drive 1029.00 Logic Array ProApp 20S 699.00 ProApp 30S 899.00 ProApp 40S 1199.00 Lo Down 100 1099.00 Lo Down 30 1099.00 Mole Down 40 1599.00 Mirror Technologies 699.00 Magnet 20 699.00 Magnet 30 799.00 Magnet 40 1049.00 Mountain 20 MB Hard with SCSI 899.00 40 MB Hard with SCSI 2599.00 Personal Computer Peripherals Corp. MacBottom HD21 859.00 MacBottom HD45 1299.00 Floppy Drives. Mirror Technologies Magnum 800K External 209.00 Monitors. Mega Graphics Megascreen Video System 1699.00 Network Specialties 1599.00 Stretch Screen 20" 1599.00 Memory Boards. 129.00 <	Pro-43 Internal for SE	\$799.00
MacStack 40		
Ehman Engineering Inc. 20 MB Hard Drive		
20 MB Hard Drive		
40 MB Hard Drive	20 MR Hard Drive	699 00
Logic Array		
ProApp 20S		1025.00
ProApp 30S. 899.00 ProApp 40S. 1199.00 Lo Down 849.00 Lo Down 30. 1099.00 Lo Down 40. 1599.00 Mirror Technologies 699.00 Magnet 20. 699.00 Magnet 30. 799.00 Magnet 40. 1049.00 Mountain 20 MB Hard with SCSI. 899.00 40 MB Hard with SCSI. 2599.00 Personal Computer Peripherals Corp. MacBottom HD21. 859.00 MacBottom HD45. 1299.00 Floppy Drives. Mirror Technologies Magnum 800K External. 209.00 Monitors. Mega Graphics Megascreen Video System. 1699.00 Network Specialties Stretch Screen 20". 1599.00 Radius 1599.00 Full Page Display. 1599.00 Memory Boards. 129.00 MacSnap 548. 369.00 MacSnap Plus 2. 249.00 MacSnap Plus 2. 249.00 MacMemory, Inc. MaxPlus 2x4. 519.00 MaxPlu	Dro Ann 20S	600 00
ProApp 40S		
Lo Down Lo Down 20		
Lo Down 20.		1199.00
Lo Down 30.		0.40.00
Lo Down 40		
Mirror Technologies 699.00 Magnet 20		
Magnet 20. 699.00 Magnet 30. 799.00 Magnet 40. 1049.00 Mountain 20 MB Hard with SCSI. 899.00 40 MB Hard with SCSI. 2599.00 80 MB Hard with SCSI. 2599.00 Personal Computer Peripherals Corp. MacBottom HD21. 859.00 MacBottom HD45. 1299.00 Floppy Drives. Mirror Technologies Magnum 800K External. 209.00 Monitors. Mega Graphics Mega Graphics 1699.00 Network Specialties 1599.00 Stretch Screen 20". 1599.00 Radius 1599.00 Full Page Display. 1599.00 Memory Boards. 129.00 MacSnap 524. 129.00 MacSnap 548. 369.00 MacSnap Plus 2. 249.00 MacSnap Plus 2H. 649.00 MacMemory, Inc. 319.00 MaxPlus 2x4. 519.00 MaxPlus 2x4-S. 589.00 Turbo Max. 999.00 Tape Backup.		1599.00
Magnet 30		coo oo
Magnet 40		
Mountain 899.00 40 MB Hard with SCSI. 1499.00 80 MB Hard with SCSI. 2599.00 Personal Computer Peripherals Corp. 859.00 MacBottom HD21. 859.00 MacBottom HD45. 1299.00 Floppy Drives. 1299.00 Mirror Technologies Magnum 800K External. 209.00 Monitors. Mega Graphics Megascreen Video System 1699.00 Network Specialties 1599.00 Stretch Screen 20". 1599.00 Radius 1599.00 Full Page Display. 1599.00 Memory Boards. 129.00 MacSnap 524. 129.00 MacSnap 548. 369.00 MacSnap Plus 2. 249.00 MacSnap Plus 2H. 649.00 MacMemory, Inc. 319.00 MaxPlus 2x4. 519.00 MaxPlus 2x4-S. 589.00 Turbo Max. 999.00 Tape Backup.		
20 MB Hard with SCSI. 899.00 40 MB Hard with SCSI. 1499.00 80 MB Hard with SCSI. 2599.00 Personal Computer Peripherals Corp. MacBottom HD21. 859.00 MacBottom HD45. 1299.00 Floppy Drives. Mirror Technologies Magnum 800K External. 209.00 Monitors. Mega Graphics Mega Graphics 1699.00 Network Specialties 1599.00 Stretch Screen 20". 1599.00 Radius 1599.00 Full Page Display. 1599.00 Memory Boards. 129.00 MacSnap 524. 129.00 MacSnap 548. 369.00 MacSnap Plus 2. 249.00 MacSnap Plus 2H. 649.00 MacMemory, Inc. 319.00 MaxPlus 2x4. 519.00 MaxPlus 2x4-S. 589.00 Turbo Max. 999.00 Tape Backup.		1049.00
40 MB Hard with SCSI. 1499.00 80 MB Hard with SCSI. 2599.00 Personal Computer Peripherals Corp. MacBottom HD21. 859.00 MacBottom HD45. 1299.00 Floppy Drives. Mirror Technologies Magnum 800K External. 209.00 Monitors. Mega Graphics Mega Graphics 1699.00 Network Specialties 1599.00 Stretch Screen 20". 1599.00 Radius 1599.00 Full Page Display. 1599.00 Memory Boards. 129.00 MacSnap 524. 129.00 MacSnap 548. 369.00 MacSnap Plus 2. 249.00 MacSnap Plus 2H. 649.00 MacMemory, Inc. 319.00 MaxPlus 2x4. 519.00 MaxPlus 2x4-S. 589.00 Turbo Max. 999.00 Tape Backup.		
80 MB Hard with SCSI. 2599.00 Personal Computer Peripherals Corp. MacBottom HD21. 859.00 MacBottom HD45. 1299.00 Floppy Drives. Mirror Technologies Magnum 800K External. 209.00 Monitors. Mega Graphics 1699.00 Network Specialties 1599.00 Stretch Screen 20" 1599.00 Radius 1599.00 Full Page Display 1599.00 Memory Boards. 129.00 MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.		
Personal Computer Peripherals Corp. MacBottom HD21 859.00 MacBottom HD45 1299.00 Floppy Drives. Mirror Technologies Magnum 800K External 209.00 Monitors. Mega Graphics 1699.00 Megascreen Video System 1699.00 Network Specialties 5tretch Screen 20" 1599.00 Radius Full Page Display 1599.00 Memory Boards. Dove Computer MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	40 MB Hard with SCSI	1499.00
MacBottom HD21 859.00 MacBottom HD45 1299.00 Floppy Drives. Mirror Technologies Magnum 800K External 209.00 Monitors. Mega Graphics Mega Graphics 1699.00 Network Specialties 1599.00 Stretch Screen 20" 1599.00 Radius 1599.00 Full Page Display 1599.00 Memory Boards. 129.00 MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	80 MB Hard with SCSI	2599.00
MacBottom HD45. 1299.00 Floppy Drives. Mirror Technologies 209.00 Magnum 800K External. 209.00 Monitors. Mega Graphics 1699.00 Megascreen Video System 1699.00 Network Specialties 1599.00 Radius Full Page Display 1599.00 Memory Boards. 129.00 MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	Personal Computer Peripherals Cor	p.
Floppy Drives. Mirror Technologies Magnum 800K External 209.00 Monitors. 1699.00 Mega Graphics 1699.00 Megascreen Video System 1699.00 Network Specialties 1599.00 Radius 1599.00 Full Page Display 1599.00 Memory Boards. 129.00 MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.		
Mirror Technologies 209.00 Magnum 800K External 209.00 Monitors. Mega Graphics Megascreen Video System 1699.00 Network Specialties 1599.00 Stretch Screen 20" 1599.00 Radius 1599.00 Full Page Display 1599.00 Memory Boards. 129.00 MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	MacBottom HD45	1299.00
Mirror Technologies 209.00 Magnum 800K External 209.00 Monitors. Mega Graphics Megascreen Video System 1699.00 Network Specialties 1599.00 Stretch Screen 20" 1599.00 Radius 1599.00 Full Page Display 1599.00 Memory Boards. 129.00 MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	Flonny Drives.	
Magnum 800K External 209.00 Monitors. Mega Graphics Megascreen Video System 1699.00 Network Specialties 1599.00 Stretch Screen 20" 1599.00 Radius 1599.00 Full Page Display 1599.00 Memory Boards. 129.00 MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	Mirror Technologies	
Monitors. Mega Graphics Megascreen Video System 1699.00 Network Specialties 1599.00 Stretch Screen 20" 1599.00 Radius Full Page Display 1599.00 Memory Boards. 129.00 MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	Magnum 800K External	209.00
Megascreen Video System 1699.00 Network Specialties Stretch Screen 20" 1599.00 Radius Full Page Display 1599.00 Memory Boards. 1599.00 Memory Boards. 129.00 MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	Magnum book External	207.00
Megascreen Video System 1699.00 Network Specialties Stretch Screen 20" 1599.00 Radius Full Page Display 1599.00 Memory Boards. 1599.00 Dove Computer 129.00 MacSnap 524 129.00 MacSnap Flus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	Monitors.	
Megascreen Video System 1699.00 Network Specialties Stretch Screen 20" 1599.00 Radius Full Page Display 1599.00 Memory Boards. 1599.00 Dove Computer 129.00 MacSnap 524 129.00 MacSnap Flus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	Mega Graphics	100000000000000000000000000000000000000
Stretch Screen 20" 1599.00 Radius 1599.00 Full Page Display 1599.00 Memory Boards. 1599.00 Dove Computer 129.00 MacSnap 524 129.00 MacSnap Flus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	Megascreen Video System	1699.00
Radius Full Page Display 1599.00 Memory Boards. 129.00 MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	Network Specialties	B CONTRACTOR OF THE PARTY OF TH
Full Page Display. 1599.00 Memory Boards. Dove Computer MacSnap 524. 129.00 MacSnap 548. 369.00 MacSnap Plus 2. 249.00 MacSnap Plus 2H. 649.00 MacMemory, Inc. MaxPlus 319.00 MaxPlus 2x4. 519.00 MaxPlus 2x4-S. 589.00 Turbo Max. 999.00 Tape Backup.	Stretch Screen 20"	1599.00
Memory Boards. Dove Computer MacSnap 524. 129.00 MacSnap 548. 369.00 MacSnap Plus 2. 249.00 MacSnap Plus 2H. 649.00 MacMemory, Inc. 319.00 MaxPlus 2x4. 519.00 MaxPlus 2x4-S. 589.00 Turbo Max. 999.00 Tape Backup.		
Dove Computer MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory Inc. 319.00 MaxPlus 319.00 MaxPlus 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup 989.00		
Dove Computer MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory Inc. 319.00 MaxPlus 319.00 MaxPlus 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup 989.00	Memory Boards.	
MacSnap 524 129.00 MacSnap 548 369.00 MacSnap Plus 2 249.00 MacSnap Plus 2H .649.00 MacMemory Inc. 319.00 MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup 999.00	Dove Computer	
MacSnap 548	MacSnap 524	129.00
MacSnap Plus 2 249.00 MacSnap Plus 2H 649.00 MacMemory, Inc. 319.00 MaxPlus 519.00 MaxPlus 2x4 589.00 Turbo Max 999.00 Tape Backup.	MacSnap 548	369.00
MacSnap Plus 2H. 649.00 MacMemory, Inc. 319.00 MaxPlus 519.00 MaxPlus 2x4. 589.00 Turbo Max 999.00 Tape Backup.		
MacMemory, Inc. MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.	MacSnap Plus 2H	649.00
MaxPlus 319.00 MaxPlus 2x4 519.00 MaxPlus 2x4-S 589.00 Turbo Max 999.00 Tape Backup.		
MaxPlus 2x4. 519.00 MaxPlus 2x4-S. 589.00 Turbo Max. 999.00 Tape Backup.	MaxPlus	319.00
MaxPlus 2x4-S	MaxPlus 2x4	519.00
Turbo Max999.00 Tape Backup.		
Tape Backup.		
AST Research, Inc.		
ARM A ARMOUNT WILL ALLEY	AST Research, Inc.	



AST 40004199.00
Mountain
20 MG Removable Bernoulli SCSI1499.00
Dual 20 MB Removable2199.00
Digitizers/Scanners.
Turboscan
Koala
MacVision II 300 DPI329.00
Modems.
Hayes
Smartmodem 1200299.00
Smartmodem 2400449.00
Smartcom II
Software.
Aegis Development
Doug Clapps Word Tools45.00
. 001
Tempo
Ann Arbor Software
Full Write
Ashton-Tate
D:Base Mac
Berkley Systems Design
Stepping Out
Broderbund
Print Shop 29.00

Cricket	
Cricket Draw	169.00
Cricket Graph	119.00
Data Tailor	
Data Tailor Trapeze	169 00
Data Viz	102.00
MacLink Plus w/Cable	120.00
	129.00
Deneba	1 50 00
Coach Professional	159.00
Innovative Data Design	
MacDraft	159.00
Letraset	
Ready Set Go 4.0	399.00
Lundeen & Associates	
Works & Spell	39.00
Microsoft	
Word 3.1	239.00
File	
Works	
Excel	210.00
Silicone Beach	219.00
Silicon Press	44.00
	44.00
Software Discoveries	22.00
Merge Write	33.00
SuperMac Software	
Super Laser Spool	99.00
Sentinel	99.00
Sentinel	
Sentinel	
Sentinel	99.00
Sentinel	99.00 3.99 9.99
Sentinel	99.00 3.99 9.99
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB	99.00 3.99 9.99 77.00 77.00
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver	99.00 3.99 9.99 77.00 77.00 63.00
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel	99.00 3.99 9,99 77.00 77.00 63.00 21.00
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel	99.00 3.99 9,99 77.00 77.00 63.00 21.00
Sentinel	99.003.999.9977.0063.0021.0019.00
Sentinel	99.003.999.9977.0063.0021.0019.00
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel Disk Drive Cleaning Kit Kalmar Designs Teakwood Disk Cabinet	99.003.999.9977.0063.0021.0019.00
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel Disk Drive Cleaning Kit Kalmar Designs Teakwood Disk Cabinet Disks.	99.003.999,9977.0063.0021.0019.00
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel Disk Drive Cleaning Kit Kalmar Designs Teakwood Disk Cabinet Disks. Maxell	99.00 3.99 77.00 77.00 63.00 21.00 19.00
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel Disk Drive Cleaning Kit Kalmar Designs Teakwood Disk Cabinet Disks. Maxell MXF2 3.5" DS/DD	99.003.9977.0077.0063.0021.0019.00
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel Disk Drive Cleaning Kit Kalmar Designs Teakwood Disk Cabinet Disks. Maxell MXF2 3.5" DS/DD Sony	99.003.9977.0077.0063.0021.0013.99
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel Disk Drive Cleaning Kit Kalmar Designs Teakwood Disk Cabinet Disks. Maxell MXF2 3.5" DS/DD	99.003.9977.0077.0063.0021.0013.99
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel Disk Drive Cleaning Kit Kalmar Designs Teakwood Disk Cabinet Disks. Maxell MXF2 3.5" DS/DD Sony SCMFD2 3.5" DS/DD	99.003.9977.0077.0063.0021.0013.99
Sentinel	99.003.9977.0077.0063.0021.0013.99
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel Disk Drive Cleaning Kit Kalmar Designs Teakwood Disk Cabinet Disks. Maxell MXF2 3.5" DS/DD Sony SCMFD2 3.5" DS/DD Surge Protectors. Curtis	99.003.9977.0063.0019.0013.9919.99
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel Disk Drive Cleaning Kit Kalmar Designs Teakwood Disk Cabinet Disks. Maxell MXF2 3.5" DS/DD Sony SCMFD2 3.5" DS/DD Surge Protectors. Curtis 6 Outlet 6' Cord Filter	99.003.9977.0063.0019.0013.9919.99
Sentinel T/Maker Write Now Accessories. Allsop Disk File/10 Disk File/30 Kensington Turbo Mouse Turbo Mouse ADB System Saver Tilt/Swivel Disk Drive Cleaning Kit Kalmar Designs Teakwood Disk Cabinet Disks. Maxell MXF2 3.5" DS/DD Sony SCMFD2 3.5" DS/DD Surge Protectors. Curtis	99.003.9977.0077.0063.0019.0013.9919.99

new kid on the block. satisfied PC customers, old friend.



CMS MacStac 20 Hard Drive

\$599



Sigma Designs
LaserView Display Sys. \$1999



Ehman Engineering 800K Floppy Drive.

\$189



Mountain 40MB Fixed/20MB Remov. \$2599



Nutmeg/Xerox Full Page Display

\$1299



Thunderware Thunderscan

\$209

CMO MacCenter. Two years in the making.

One thing you'll come to appreciate about CMO is our almost religious attention to detail. Volume sales are our lifeblood, so we have to be good.

During the years, we've developed a system of service and support that is without equal in the industry. That means we're fast, we're accurate, and we accommodate your needs.

MacCenter is the result of that experience.

We're committed to providing Mac users, like you, the latest products at attractive prices. And we back everything we sell with the factory warranties, expert consultation and technical amenities we hope will keep you coming back.

MacCenter was two years in the making. We think it was time well spent.

CMO designed MacCenter for you. Call us. Compare us. Why wait?

MacCenter Mac

When you want to talk computers, you want to talk to us. Call toll-free: 1-800-233-8950.

Outside the USA: 717-327-9575. TELEX: 5106017898. FAX 717-327-1217
Corporate and Educational Institutions call 1-800-221-4283.
CMO. 477 East Third Street, Dept. N111, Williamsport, PA 17701
All major credit cards accepted.

Circle 371 on reader service card

A HyperCard Glossary

Background The design of a HyperCard card that is shared by other cards in the stack, comparable to the blue and red lines printed on a stack of traditional index cards. The background may include graphics, buttons, and fields.

Button A place on a card where you click to effect some action. Buttons may look like arrows, icons, dialog box text buttons, radio buttons, or check boxes. Or they may be transparent (invisible), positioned atop graphics that wouldn't otherwise respond to a click.

Field A rectangular area on a card where you type text.

Fields come in several types, including scrolling fields, and may be one or more lines long.

Handler A self-contained HyperTalk script that tells HyperCard what to do under well-defined conditions (for example, "on mouseUp" is the handler for when the mouse button is released).

Repeat Loop A section of a HyperTalk script that performs operations repeatedly on a succession of similar objects, such as flipping through a series of cards to accumulate a list of information.

Notice the three buttons on top of the card, next to the To Do title. The button that looks like a stack of ruled cards takes you to the last of your Reminder cards so that you can add a new one when you need to. The other two buttons link to Hyper-Card's Address and Phone stacks. Scripts attached to these buttons first look to see if any text in the current card is selected. If so, clicking on the button not only takes you to the appropriate stack, but also performs a HyperCard Find command for the selected text.

When you start up the Tickler, it automatically fetches items from the Reminder cards that pertain to the current date, as indicated by your Mac's internal clock. You look ahead by clicking the Tomorrow button and return to the present by clicking

The remaining 12 buttons on the To Do card are the transparent ones atop button art copied from the Art Ideas stack that comes with HyperCard. Clicking on a button next to an Action item instantly takes you to the Reminder card for that item.

(continues)

■ For MacProducts 1-800-MAC-DISK

SOFTWA	RE
Adobe Illustrator	call
Cricket Draw	179.00
Crossword Magic	34.00
Dark Castle	33.00
Dbase Mac	320.00
Falcon	37.00
FullWrite	204.00
GraphicWorks 1.1	68.00
LaserFX	139.00
Laser Paint	312.00
Lightspeed C	125.00
MacDraft 1.2	152.00
MacGolf	36.00
MacMoney	39.00
MacProof	129.00
McMAX	192.00
MGMStation	call
Microsoft Excel	229.00
Microsoft Word	239.00
Microsoft Works	185.00
MiniCAD 3.1	389.00
Parameter Mgr.+	289.00
Puppy Love	19.50
ReadySetGo	410.00
Scoop	call
Shadowgate	36.00
Smart Alarms	33.00
SuperPaint	89.00
WordPerfect	call

HARDWA	ARE
Hard Disk Drives:	
MAGIC30	699.00
Magic40	799.00
Magic60	899.00
Magic91	1595.00
Magic150	1950.00
MacBottom 45	1239.00
Magic 800K Drive	199.00
PC-Mac Keyboard	119.00
Radius Screen	1595.00
ScripTEN Printer	3550.00
Microtek Scanner	1395.00
Xerox 15" Monitor	1549.00
Magic 20MB Tape	599.00
Magic 60MB Tape	699.00
Thunderscan 4.0	199.00
MacVision	184.00
A+ Optical Mouse	99.00
Turbo Mouse	87.00
800K Drive	185.00
1200 B. Modem	99.00
MacFan	88.00
System Saver	67.00

DECEMBER DEALS



1 MEG SIMMS Only \$199



2400 Baud Modem \$199

Software Rentals Try a product before you buy it. Rentals are only 1/5 of the purchase price. No Minimum.

RIBBONS

Sony SS Boxed	11.60
Sony SS Bulk	1.04
Sony DS Boxed	16.80
Sony DS Bulk	1.34
MacDisk SS Bulk	.99
MacDisk DS Bulk	1.25
Disab Bibbons	

Black Ribbons 4.50 Colored Ribbons **Multicolored Ribbons 12.00**

ACCESSORIES

Hypercard Handbook	21.00
The Macintosh Bible	
MacPlus Bag	55.00
Mac SE Bag	69.00
Immage II Bag	55.00
Easy Net	29.00
Disk File/30	6.95
MAC SCREWDRIVER	9.95
Mac Calendar	8.00

MEMORY **UPGRADES**

128K-512K 115.00 128K-1024K 249.00 512K-1024K 149.00 512K-1024K Kit 99.00 128K-2MEG 599.00 **SCSI Port** 69.00 68020/68881 595.00 Dove Upgrades call

- * 30-Day Money-Back Guarantee * 6 Mo. 3 Year Warranty * Over 5000 Upgrades Completed
- Apple-compatible

Ordering Information National: Call 1-800-622-3475 Texas: Call 1-800-2MAC-TEX Hours: 7:30am-7:30pm CDT. There is a \$40 minimum on all orders. We accept Visa, Master-Card, American Express, C.O.D., Company and Institution PO's, and checks. You are not charged until we ship your order. Texas residents please add 8% sales tax Prices are subject to change and items are subject to availability. Returns may be subject to a re-Shipping Information Minimum \$4 additional. UPS Next Day & 2nd Day Air also available.

MacProducts USA™

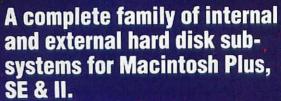
9709 Brown Lane Suite E Austin Texas 78754 512-832-0335

Circle 459 on reader service card

Raw Power

Fastest 80MB Available for Macintosh II





Macintosh II

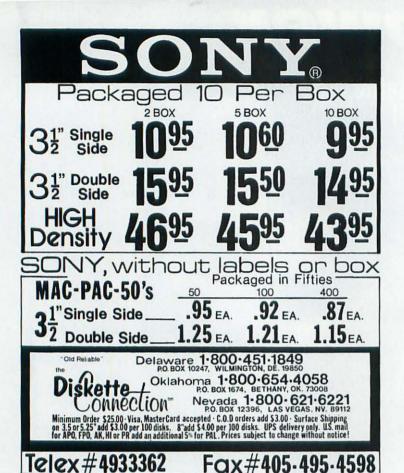
Call today for the name and number of your nearest CMS dealer.

Circle 657 on reader service card

CMS Enhancements, Inc. 1372 Valencia Avenue, Tustin, CA 92680 (714) 259-9555 Telex (023) 371-8711 FAX (714) 549-4004



Macintosh is a registered trademark of Apple Computer Corporation. CMS is a registered trademark of CMS Enhancements, Inc.

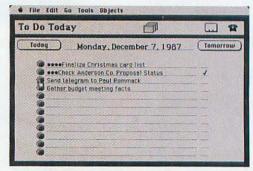


"Orders Accepted Worldwide"



Circle 562 on reader service card

Business Clinic



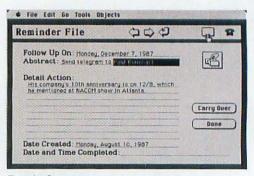
To Do List

The To Do card automatically lists the items that need attention today. Unfinished items get a bullet for each day they're late. To see an item's Reminder card, click on the button next to it.

The Reminder background contains five visible and plainly identified fields (see "Reminders"). The three arrow buttons at the top of the card should be familiar to all HyperCard users, but here they have an interesting twist. Clicking on the Previous and Next buttons lets you cycle through just the Reminder cards, without ever accidentally hitting the To Do card. To return to the To Do card, you click the angled arrow button.

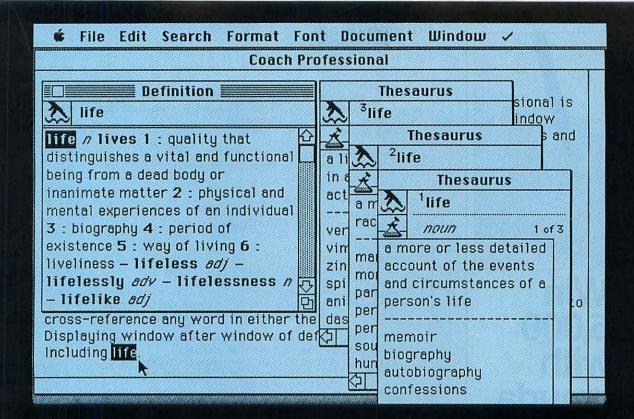
Below the Address and Phone buttons is a Sort button, which sorts the Reminder cards by their Follow Up On dates. Below that is a Carry Over button, which lets you replace the date in the Follow Up On field with the next day's date. Clicking on the Done button places the current date and time in the Completed field at the bottom of the card. Incidentally, if you click on the To Do card to check off an item, the Tickler automatically fills in this Completed field in the Reminder card for that item.

(continues)



Reminders

You fill out a Reminder card for each task you plan. The cards link to the Address and Phone stacks. Selecting a name and clicking on the Address stack button finds that person's card.



Spelling Coach Professional. The only spelling checker that will also teach you the meaning of life.

Stop packing. It's no longer necessary to climb a mountain in Nepal to consult a legendary guru. Because now there's Spelling Coach Professional." The first hypertext spelling and reference system available for any microcomputer. It gives you instant access to Proximity/ Merriam Webster's Concise 85,000 word electronic dictionary with complete definitions.

Installed as a desk accessory (Swamis can't do that), Coach Professional™ is extremely easy to use. Simply select any word and in seconds a window appears showing you its definition, its correct hyphenation and all uses and tenses. Just as they appear in Merriam-Webster's book version.

Coach Professional™ also includes the Coach™

Merriam-Webster Thesaurus. This 245,000 synonym thesaurus is organized by meaning group and is the only thesaurus with definitions to help you understand the difference between each meaning.

You can use Coach Professional™ interactively (as you type), or your completed documents can be scanned at over 150 words per second. It shows your misspellings in context and suggests the correct spelling. Then one click and the correction is made.

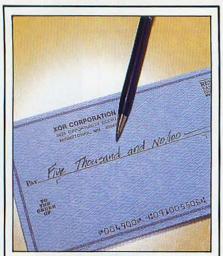
In addition to the spelling dictionary, Coach Professional™ includes a medical dictionary, a legal dictionary and even contains a special

20,000 word geographical and biographical supplement.

So if you're looking for the meaning of it all, look into Coach Professional.™ At \$195, it's at least ten times cheaper than a round-trip ticket to Kathmandu.

Also available from Deneba are Spelling Coach™ (spelling checker only) at \$99.95 and Coach™. Thesaurus at \$59.95. See your local dealer for a complete demonstration of any of our products. Or call us at 1-800-622-6827. In Florida call (305) 594-6965.





with **Bermuda Square**[™]

Solve the Bermuda Square puzzle and you could win \$5,000 from XOR. If you're the one who can fit the 24 different sized squares into the one larger square, you could be the winner.*

Based on this mathematical formula of $1^2 + 2^2 + 3^2 + ... + 24^2$ = 70², it's the puzzle of the century. Operating on your IBM PC, PC-XT, PC-AT, or their compatibles as well as the Apple Macintosh, Bermuda Square brings you hours of puzzlesolving fun.

Pick up your copy of Bermuda Square at your local computer store today. Or call 1-800-635-2425 TOLL FREE. And be sure to check out NFL Challenge, PRO Challenge,™ Basketball Challenge™ and Oligopoly, examples of some other First Class Software from XOR.

* Write XOR Corporation for complete contest rules.



Circle 68 on reader service card

Business Clinic

```
on openStack
  -- no need to update more than once per day
  if field "date" is the long date then exit openStack
  else update the long date
end openStack
on update theDate
  -- the watch cursor while you wait
  set cursor to 4
  -- clear out the old stuff
  put empty into field "Actions" put empty into field "Done"
  put empty into field "Links"
  get theDate
  put it into field "Date"
  convert it to seconds
                             -- today's date in seconds
  put it into today
  put 60*60*24 into oneDay -- one day's seconds
                             -- starting point for later
  put 1 into lineNumber
  -- fetch data from cards in Reminder background...
  -- without going to those cards
  repeat with x = 2 to the number of cards
    get (field "FollowUpDate" of card x)
    convert it to seconds
    if it is empty then next repeat
    if it <= today and (field "Completed" of card x) is empty then
      put (field "Abstract" of card x) ¬ into line lineNumber of field "Actions"
      -- insert one bullet for each day late
      repeat (today - it) div oneDay times
        put "•" before line lineNumber of field "Actions"
      end repeat
      -- field "Links" holds a list of card IDs of linked cards
      put (the name of card x) into line lineNumber of field "Links"
      add 1 to lineNumber
    end if
  end repeat
end update
-- address of linked card is derived from the target button's name
on mouseUp
  if the name of the target contains "Go" then
    get second word of the short name of the target
    go to line it of field "Links" -- the id of the linked card
  end if
end mouseUp
```

Listing 1

The To Do card's background contains three HyperTalk handlers: one executes when you open the stack, one updates your To Do list each day, and one handles the 12 Go buttons.

Using the Stack

Making the Tickler work for you is as simple as creating a new Reminder card. You do this by selecting New Card from the HyperCard menu (or by typing \mathbb{H}-N) and filling in three fields: Follow Up On (the date you want the task to appear on the To Do list): Abstract (a summary of the task, which will be listed in the To Do card); and Detail Action (a specific description of the task).

When you open the stack, the To Do card shows the agenda for the current day. HyperCard takes a few seconds to assemble the list, but it only needs to do so once each day.

The Update Handler

Looking at the scripts under the surface of the cards shows how everything fits together. By far the most complex script in the Tickler stack is the one that builds the To Do list when you open the stack (see Listing 1). This script consists of two message handlers, openStack and update,

(continues)



Turbo Mouse: Twice the speed, in half the space.

Finally, a Mouse that's really quick. One that doesn't require a lot of room on your desk. One that's easy to use, even on a desk full of papers. Turbo Mouse from Kensington.

Turbo Mouse turns mouse technology upside down. It puts the mouse ball on top, rather than on the bottom like a standard mouse. You move only the mouse ball, not the whole mouse. That's why Turbo Mouse is quicker, quieter, and easier to use.

Turbo Mouse doesn't get its speed only from this ease of use. It has an automatic acceleration feature that senses the speed at which you are working and moves the cursor further when you move the mouse ball faster.

Turbo Mouse has two mouse buttons—one for right-handed users and another for lefties. And, since it's only 4" x 6", Turbo Mouse will fit neatly at the end of your keyboard.

For Macintosh™, Mac Plus, Apple® IIe, or IIc, ask for model 62350. For Macintosh SE, Mac II, or Apple IIGs, ask for Turbo Mouse ADB, model 62352. For more information, or a dealer near you, call (800) 535-4242. In NY (212) 475-5200.

temborarily analyous

KENSINGTON.

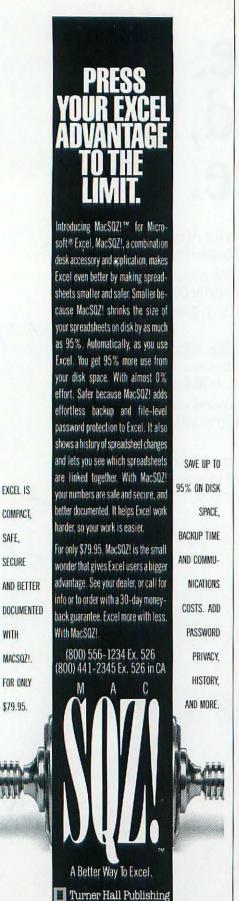
Macintosh SE

return

1 2 enter

ngton Microware Ltd

Circle Librareader service card



SAFE.

WITH

Business Clinic

which are attached to the To Do card background. (With the card on the screen. choose Bkgnd Info from the Objects menu and click on the Script button to type in the script.)

Each time the stack opens, Hyper-Card sends an openStack message, which the openStack handler intercepts. This handler first determines whether the To Do card's Date field holds the current day's date. If it does, there's no need to update the card. If an update is needed, the Tickler initiates one by calling the update handler into action, based on the current date (that is, the value returned by the long date function).

At the top of the update handler, the date is plugged into a variable called the-Date, which will be used in a moment.

After clearing the card's multiple-line fields, the handler puts the current date into the To Do card's Date field and sets the values of three variables used in the next section, which begins "repeat with x = 2."

At the heart of the update handler is this repeat loop, which checks each Reminder card to see if its Follow Up Date field equals or precedes the current date (this process takes just a few seconds). If a card's Follow Up Date indicates that it is a candidate for the To Do list, the program ascertains whether the Date and Time Completed field has not been filled in. When the program finds a card meeting those criteria, it copies the Abstract field into a line of the To Do card's Actions field, starting with line number 1.

Next, the repeat loop adds one bullet before the Action name for each day an item is overdue. Carried-over items marked with bullets really stand out in the To Do card list-something an organized person likes to see.

The next line of the repeat loop links the task on the To Do card with its Reminder card. The script puts the name of the Reminder card (in the form of "card id 3592") into the hidden Links field corresponding to the line of the Action list. (In a moment, we'll see how these card IDs work to link the To Do items to the appropriate Reminder cards.)

The final act of the repeat loop advances the line-number counting variable (lineNumber) by one. Thus, the next item to be posted on your To Do list goes into line 2 of the Actions field, and the name of the Reminder card for that item goes into line 2 of the Links field.

The Linked Buttons

Remember the 12 buttons that link the Action items to their Reminder cards? You could write Reminder button scripts to make the links, and chances are that each button would then have its own mouseUp message handler inside of it. There's nothing wrong with that, but the Tickler demonstrates a more efficient method of handling the buttons.

The technique involves naming the buttons systematically and using the names to reach the linked card. In the Tickler, the 12 buttons are named Go 1, Go 2, and so on, through Go 12. These buttons have no scripts attached to them; in fact, you must go into each button's script editor and delete the default empty on mouseUp/end mouseUp handler in the script. The To Do card's background script has a mouseUp handler that takes care of these Go button messages (the last handler in Listing 1).

The handler uses the name of the button as an index to the line number in the Links field. The handler reads the line of text in the hidden field as the destination for the Go command. For example, if the first line of the Links field contains card id 1920, then go line 1 of field "Links" is the same as go card id 1920. Thus, 1 handler takes the place of 12.

Checking Off

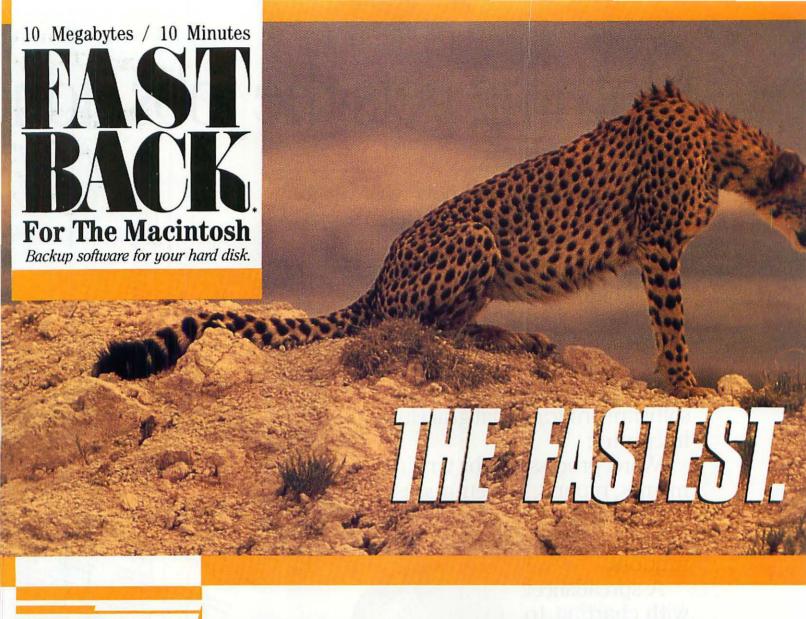
The comparatively complex handler that places the check mark next to a completed To Do item is also worth dissecting. Recall that it enters a completion time and date in the associated Reminder card. Moreover, if you realize that a checked item has not been completed, you may remove the check mark (and simultaneously remove its corollary on the Reminder card).

Listing 2 shows the mouseUp handler attached to the locked Done field on the To Do card. If a text field is locked, the browse tool does not change to the text-insertion pointer when atop the field. You can then treat the field as a button and add clickrelated handlers.

The first line of the handler establishes the line number where you clicked with a bit of simple arithmetic: after you've grabbed the vertical coordinate of the mouse-click location, subtract from it the number of screen pixels above the top of

(continues)

Circle 248 on reader service card



Fifth Generation

S Y S T E M S, I N C. 11200 Industriplex Blvd. Baton Rouge, LA 70809

Sales Office: 2691 Richter Ave., Suite 107, Irvine, CA 92714 (800) 225-2775 (714) 553-0111

NOW AVAILABLE FOR THE MACINTOSH

If your backup program isn't fast, you won't use it. Fastback for the Macintosh is the only program that can copy a full 10-Megabyte hard drive to standard floppy disks in less than 10 minutes! The minutes you save with Fastback may add up to hours compared to other backup programs.

Fastback is also the only program that uses advanced **error correction** techniques to recover data from damaged backup disks. And Fastback is **powerful** -- you can backup all your files, select folders and files for backup, or have Fastback select only the files which have changed. Fastback will even count up the disks you need and **print labels** for them.

Protect the data on your hard disk now. Remember, among those who use hard disks on their Macintosh systems, there will only be two types -- those who use Fastback, and those who wish they had! See your dealer today and ask for Fastback from Fifth Generation Systems, the leader in disk backup software.

Nothing gets the jobs done

Some people never know where their next job's coming from. That's why there's Microsoft® Works, the winner of five major awards including Macworld's 1987 and MacUser's 1986 Integrated Product of the Year awards. Microsoft Works is a one-disk software program that gracefully integrates: Word processing, for writing memos, reports, presentations. A database tool with reporting.

to keep track of clients, jobs,

vendors.

A spreadsheet with charting, to compute, analyze, interpret, and then graph anything to do with finance or

numbers. Finally, a communications tool which lets you get stock quotes, make travel reservations, do research, and send

reports across

the phone lines.

the country, right over

Microsoft Works is

seamlessly melded together.

You can have all four tools on

screen at once. Jump instantly

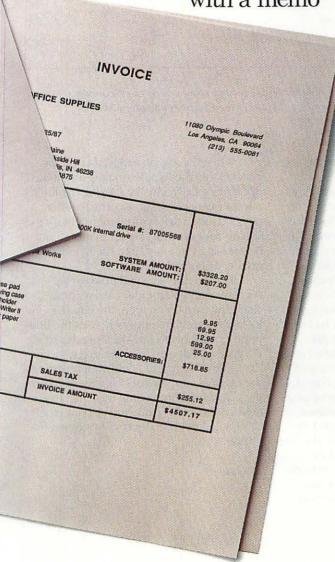
ike Microsoft Works.

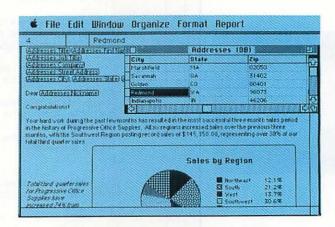
rom one to another. And later combine work done in each part of the program on a single

orinted page.

This easy exchange of data nakes jobs go faster and much, much easier. (Like form letters where you need to combine names from the database

with a memo





written in the word processor.)

Learning Microsoft Works is a snap. It starts with a painless, step-by-step, computer-based training program. Before you know it, you know it.

All in all, Microsoft Works is a superb solution for day to day, getit-done problems—an inspiring display of convenience, efficiency, and utility.

And of course, it's a product of Microsoft, the preeminent developer of programs for the Macintosh."

If you're in a business that won't let you stick to one thing, check out Microsoft Works—the program that can change jobs as fast as you do.

Microsoft Works. For everyone.

For the name of the nearest Microsoft dealer, call (800) 541-1261, Dept. A86.

Microsoft is a registered trademark of Microsoft Corporation. Macintosh is a trademark of Apple Computer, Inc.

External 20 MG

Price Breakthrough....\$569!



This AMCAD S-20+ Hard Drive product from AMCAD utilizes reliable Rodime drive technology. The S-20+ is a high speed, SCSI drive providing

Guarantee Two week money back satisfaction.

true value and quality.

Warranty One year parts and labor with direct watts line access to the service department.

- Includes cabling, software and documentation.
- Plug and play, already formatted at 21.3 MG.
- Integrated power supply.
- Two SCSI ports.
- Allows daisy chaining of up to 7 SCSI peripherals.
- Conveniently fits under the Mac Plus or Mac SE.



(Texas) 1-800-443-1828 1-214-323-0700 (Technical) 1325 Whitlock Lane, Suite 314 Carrollton, (Dallas) Texas 75006

Circle 613 on reader service card

Business Clinic

```
on mouseUp
  -- determine which line number the click was in
  put (item 2 of the clickLoc - 98) div 17 into lineNumber
  -- if there's no action item, then don't check it off if line lineNumber of field "Actions" is empty then exit mouseUp
   - check it off if there is no check mark in the line of the click
  if line lineNumber of field "Done" is empty then
    put "√" into line lineNumber of field "Done"
    -- also update the Reminder card without showing it
    set lockScreen to true
    push card
    go to line lineNumber of field "Links"
    put the abbr date & " at " & the time into field "Completed"
    pop card
    set lockScreen to false
    exit mouseUp
  else
    -- uncheck a previously checked-off item
    put empty into line lineNumber of field "Done"
    -- and erase the date and time it was originally completed
    set lockScreen to true
    push card
    go to line lineNumber of field "Links"
    put empty into field "Completed"
    pop card
    set lockScreen to false
  end if
end mouseUp
```

Listing 2

This bandler belongs to the long, skinny field in the To Do card where you check off completed items. When you check off an item, the corresponding Reminder card is automatically marked as completed.

the field and divide that amount by the text height of the field's font.

To re-create this feature in your Tickler, here's how to establish the number of pixels above the top of the field. Place the browse tool with the tip of its pointing finger on the top edge of the field (you may want to make the field a rectangle so that you can see its top edge). Then type the mouseV into the Message Box. In my stack, that process returned 115 as the vertical coordinate of the top of the field. If I had used that measure in my math, the first line would have been numbered 0, when I really wanted 1. So I subtracted the height of one line (the amount listed in the Font dialog box next to the font size) to arrive at 98. The div arithmetic operator determines how many times (in whole numbers) the coordinate result can be divided by the line height. That tells me the line number.

Next, the handler checks the Actions field item for that line to make sure that something is there. If it's blank, the handler stops.

When there is an action that can be checked off, the handler makes sure it has not already been checked. Using the linenumber variable set above, the handler puts a check-mark symbol (actually, it's the square-root symbol you get in most fonts by pressing Option-v) into the Done field on the appropriate line.

To place the date and time in the corresponding Reminder card without changing cards on screen, the handler locks the screen temporarily, uses the linenumber variable to find the linked card's ID, goes to that card, places the date and time in the Completed field, and returns to the original card. Unchecking the field simply places an empty string into the Done field on the To Do card, and also into the Completed field on the corresponding Reminder card.

(continues)



True Stories in Typesetting

"How the world's only high-quality PostScript® output device dramatically changed our business."

Charles Solazzo

MicroComputer Publishing in New York City is one of the largest desktop publishing/output centers on the East Coast. Founded by Harold Levine, James Scrittorale and Charles Solazzo, the company has grown from one Macintosh™ and an Apple LaserWriter® into a diversified output service center. Charles Solazzo, Vice President of Sales and Marketing, tells how the company evolved.

"We organized an electronic publishing center."

"We planned to offer in-house full production service, IBM™ and Macintosh rentals, and educational service to clients who wanted to electronically publish documents.

"Our goals emphasized service because service is the foundation

of our business."

"We wanted to offer 'one-stop' service and savings."

"We now offer use and/or purchase of software programs; 300 dots-per-inch image scanning with Optical Character Reader (OCR); 3-D video digitizing and scanning; output from ImageWriters, laser printers or the Linotype Linotronic® 300 laser imagesetter; duplicating and on-line book binding.

"Our customers need only dial one telephone number, saving time

and money in their search for top-quality output."

"Our sales have quadrupled."

"When we were looking at equipment, Linotype was the only typesetting company that offered high-resolution PostScript compatibility, and still is. So we purchased Linotype's Linotronic 300 laser imagesetter, a PostScript 300 Raster Image Processor (RIP), and an ML 314 Processor.

"And in less than six months, our sales increased over 400 percent. We're almost ready for a second Linotronic laser imagesetter, probably the Linotronic 500 with its 108-pica (18-inch) wide output.

"We will enhance our graphics with scanners, plotters, cameras,

color reproduction and a CORA system front-end.

"So when the phone rings, Levine answers, 'Yes, we provide laserprinted output, but if you need higher resolution, we do have a Linotronic 300 laser imagesetter."

If you'd like to know more about the Linotronic laser imagesetters, or if you'd like to know more about the service bureaus specializing in Linotronic output in your area, contact: Linotype Company, 425 Oser Avenue, Hauppauge, NY 11788. Or call (516) 434-2016. In Canada, (416) 890-1809. And let our quality speak for itself.

This ad was composed on a Macintosh and output on a Linotronic 300 laser imagesetter.



Business Clinic

Script of background button "Tomorrow"

get field "Date" convert it to seconds - add one day add 24*60*60 to it convert it to long date update it end mouseUp

Script of background button "To Phone"

on mouseUp get the selection push card go to stack "Phone" dial it pop card end mouseUp

Script of background button "To Address"

on mouseUp get the selection push card go to stack "Address" find it end mouseUp

Script of background button "To Reminder"

on mouseUp go to last card of bkgnd "Reminder" end mouseUp

Script of background button "Today"

on mouseUp update the long date end mouseUp

Script of background "Reminder"

on newCard -- date stamp put the long date -into field "Created" end newCard

Script of background button "Sort"

on mouseUp sort dateTime by field "FollowUpDate" end mouseUp

Script of background button "To Phone"

on mouseUp get the selection push card go to stack "Phone" dial it pop card end mouseUp

Script of background button "Done"

on mouseUp if field "Completed" is not empty then can't overwrite end time exit mouseUp else put the abbr date - & " at " & the time into field "Completed" end mouseUp

Script of background button "Carry Over"

adds one day to date field convert the date to seconds add (24*60*60) to it convert it to long date put it into field "FollowUpDate"

Script of background button "To To Do"

on mouseUp go to first card end mouseUp

Script of background button "Next"

on mouseUp -- confines cycling -- to this background only go to next card of this bkgnd end mouseUp

Script of background button "Prev"

on mouseUp -- confines cycling -- to this background only go to prev card of this bkgnd end mouseUp

Script of background button "To Address"

on mouseUp get the selection push card go to stack "Address" end mouseUp

Script of background field "FollowUpDate"

on closeField convert field "FollowUpDate" to long date end closeField

All other message handlers in buttons and fields for the two backgrounds are quite short and are shown in Listing 3 for vour convenience. The only one that needs some explanation is the closeField handler for the Follow Up Date field. The Convert command here lets you type in a date in the short date format (for example, 4/5/88 or 4-5-88) and automatically stretches it to the long date format (Tuesday, April 5, 1988) when you tab to the next field or press the Enter key.

Printing

This version of the Tickler does not employ any advanced printing scripts; those might be useful if you need copies of cards to take with you. You can, of course, print the To Do card simply by choosing Print Card from the File menu (or typing #-P).

If you'd like a printout of the day's Reminder cards, you could write a short script built on the current application. The handler would execute an Open Printing command from the To Do card, click only on the Go buttons corresponding to filled out Action-item lines, and print each card it stopped on. By opening printing with the Print Stack dialog box (Open Printing with Dialog), you could print 8 or (with a Laser-Writer) 32 cards per page and take the details of your agenda with you on one or two sheets of paper.

When the stack grows bulky with old Reminder cards you no longer need, go to the first card of the Reminder background and start pressing \%-Backspace to delete each card. You can't undo this operation, so think before you delete.

I'm sure you'll have some additional ideas for enhancing the Tickler stack for your own work, but this skeleton should quickly get you going in the right direction. Let me know how you're doing with this or any other HyperCard applications you have devised.

Tell us what your sticky wickets areproblems using the Mac at work, or business problems you'd like to tackle with the Mac. Each month we'll select a workplace scenario suggested by a reader and propose a detailed, specific solution. Write Business Clinic, Macworld, 501 Second St., San Francisco, CA 94107. Address us electronically at CompuServe 70370,702, The Source BCW440, or MCI Mail "Macworld."

These 15 short scripts are attached to the buttons and fields on the To Do and Reminder cards of the Tickler stack. Each script goes into action when its button or field is clicked.



Why people love their Pro-Tech Computer Paper.

Who wouldn't love a computer paper specially designed for the printer they use?

The Pro-Tech family of specialty computer papers and film provides the consistency and reliability required for superior image quality and is specifically designed for dot matrix and daisywheel, ink jet, laser and thermal transfer printers as well as pen plotters. Pro-Tech enhances your printer's performance. And your image.

The complete line includes: Laser Papers for hi-speed and desktop laser printers (in white and colors, 25% cotton and other special finishes), Ink Jet Paper, Thermal Transfer Paper, Pen Plotter Paper, Printer Papers (in bond, 25% cotton and other special finishes) and Transparency Film. You'll love them.

Pro-Tech

Because the right paper and film makes all the difference.

Yours Free! For free samples of the right paper for your printer, contact Pro-Tech today. Return this coupon to: Pro-Tech Sampler Kit, c/o James

Return this coupon to: Pro-Tech Sampler Kit, c/o James River Corporation, Groveton Division, Groveton, NH 03582 or call toll-free Mon-Fri 8:00-5:00 EST...

1-800-521-5035

In MA: 413-589-7592

Name
Title
Company Phone
Address
City
State Zip
My computer printer is a (Manufacturer – Make – Model No.)



JAMES RIVER CORPORATION

GROVETON DIVISION

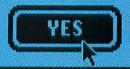
Groveton, NH 03582

MWD 12/87

© 1987 James River Corporation

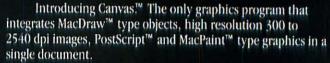


Are you sure you want to throw away the applications "MacDraw", "MacPaint", "SuperPaint", "GraphicWorks" & "FullPaint"?



Cancel

CANVAS



No more switching from one window to another. No more cutting and pasting between different programs. Everything you want in one program, in one document.

Use Canvas™ for corporate slide presentations, forms, complex graphics, diagrams, newsletters. Any where you want stunning results.

Import graphics from other programs like 4th Dimension,™ Excel™ and More™ to customize charts and graphs.

We've even included a desk accessory version so you can use Canvas™ from within your word processor, spreadsheet, database or desktop publishing program.

Canvas™ allows you to view and edit in any magnification or reduction from 3.125% to 3,200% for incredibly precise control of your image.

Canvas[™] is packed with features and powerful special effects. Bezier curves. "What you see is what you get" (WYSI-WYG) text editing. 9 feet by 9 feet of *continuous* drawing area. MacrObjects[™] (graphic macros). TIFF support. And much more.

So if you're looking for the best of everything, look nto Canvas.™

Visit your local dealer for a complete demonstration of Canvas[™] and other Deneba software including: Coach, the best selling interactive spelling checker desk accessory, Comment, the original Macintosh equivalent of 3M's Post-It notes and the Coach Merriam Webster Thesaurus.

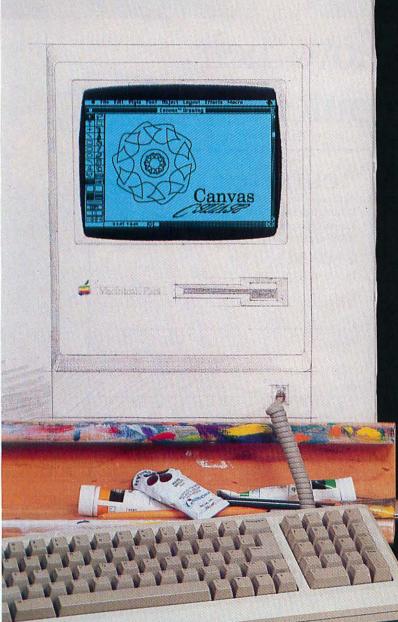
Or call us at 1-800-6CANVAS. In Florida call (305) 594-6965. Canvas™ \$195.00.

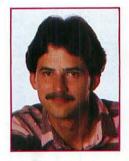


7855 N.W. 12th Street, Suite 202 Miami, FL 33126

MacDraw, MacPaint and Macintosh are trademarks of Apple Computer Inc.
ith Dimension is a trademark of Acius, Inc. Excel is a trademark of Microsoft
Corp. More is a trademark of Living Videotext, Inc. SuperPaint is a trademark of
Silicon Beach Software, Inc. GraphicWorks is a trademark of Mindscape, Inc.
FullPaint is a trademark of Ann Arbor Softworks, Inc.

Circle 621 on reader service card





Quick Tips

Answers to your questions

by Lon Poole

You may have noticed that *Macworld* articles often refer to articles that have appeared in earlier issues. If you're a new subscriber or just don't save old magazines, you may wish to order back issues. The cost is \$6 per issue in the United States and Canada, \$12 per issue elsewhere. Send your name and address, the month and year of each back issue you want, and a check (U.S. funds) to *Macworld* Back Issues, 144 Townsend St., San Francisco, CA 94107.

Back Issue Storage Device
In about July 1986 I saw an advertisement in *Macworld* from a company called Jesse Jones Box Company. They offered for \$6.95 a sharp-looking blue box in which to store a year's worth of *Macworld* magazines. Unfortunately, I no longer have the original advertisement, nor do I have the address of the box company. I have looked through numerous past issues of *Macworld* and cannot seem to find a repeat of this advertisement.

Anthony R. Vanchieri Costa Mesa, California

The address is Jesse Jones Industries, Dept. Mac-w, 499 E. Erie Ave., Philadelphia, PA 19134, 800/972-5858. The current price is \$7.95 for one slipcase, \$21.95 for three, and \$39.95 for six; add \$1 per slipcase for postage and handling.

Alter MacWrite Defaults
I use MacWrite often and am wondering how I can change the default settings of the ruler, font, font size, and paper size. When printing, I always want high quality, so I don't need the dialog box that

asks for print options. Also, is there a possibility that I can trick the program so it will accept manual hyphenation of words? This would be of great advantage for writing in German because the words tend to be long.

Hans-Ulrich Thomas Zurich, Switzerland

You can make a *MacWrite* template document that sets up all the conditions you want. Then, instead of using the New command each time you want to create a new document, you open the template document and immediately use the Save As command to give the document its own name.

To create a template, choose New from the File menu. Then set up formatting rulers, headers, footers, paper size, orientation, and other paragraph and document formatting. Choose the font, size, and style you wish to start the document with. Enter any text and paste any pictures that will appear in every document. Choose Print, select the options you will normally use, and print a copy of the template by clicking OK. Finally, save the document under a generic name, such as Letter or Envelope.

As for hyphenation, you can certainly break lines manually by strategically inserting hyphens. Just before printing, go through your document looking for short lines. Put a hyphen in the first word following a short line. This solution is less than ideal because the hyphenated word may end up in the middle of the line if you make changes in the paragraph. Ideally, you would like your hyphens to be invisible unless they occur at the end of a line. Other word processors have these optional hyphens, but not *MacWrite* 4.5.

Sleeveless Disks
When I buy disks, they arrive
wearing plastic sleeves. Should I continue
to use the sleeves on a daily basis? This has

been an area of much controversy among my fellow Macintosh owners. Some claim that the sleeves keep dust from accumulating and control static electricity. Others say that the sleeves actually cause static electricity.

Aaron Alpher Tucson, Arizona

If disk manufacturers had intended disk sleeves to be reused, I think they would have made them of more rugged material, such as the Tyvek they use for 5¼-inch disk sleeves. Also, I've yet to see a software publisher that ships application disks with sleeves. The flimsy plastic sleeves that 3½-inch disks come in probably don't do any harm, but they probably don't do any good, either. If you want to protect your disks, I'd suggest a disk storage box or a fabric disk wallet.

Away All Windows

while now, I find it bothersome to save all open documents individually. The Close All command helps, but it prompts with dialog box after dialog box, asking me if I wish to save each document. I devised an Excel macro that saves every open Excel document except the macro itself, without any prompting (see "Close&SaveAll"). To work, the macro document must be named Close&SaveAll.

Scott Silverman East Brunswick, New Jersey

Install It All

Tip: The Installer can install more than one printer driver or more than one other installation script at a time, although it may not seem like it. To do this, select one script and wait while the *Installer* fig-

(continues)



ALL-PRO tackles with PRO Challenge™

Put yourself on the 50 yard line with **PRO Challenge** from XOR. While at the console of your IBM PC, PC-XT, PC-AT, or their compatibles as well as the Apple Macintosh, you send in the plays that will make your team a winner as you battle for victory in this fast-paced game.

Starting with two all-NFL teams of equal strength, you choose from 27 offensive and 14 defensive plays to outwit your opponent or the computer in this action-packed game. Fumbles, interceptions, and penalties add to the true-to-life simulation.

Reserve your spot on the sidelines with PRO Challenge from your local computer store. Or call 1-800-635-2425 TOLL FREE. Be sure to check out NFL Challenge, Basketball Challenge, Oligopoly, and Bermuda Square, examples of some other First Class Software from XOR.





Circle 110 on reader service card

How To/Quick Tips

	A	В
1	Close&SaveAll	by Scott Silverman
2	=MESSAGE(TRUE, "Saving and closing all Excel documents")	Display advisory below menu bar
3	=ECHO(FALSE)	
4	=IF(NOT(WINDOWS()=""),GOTO(A5),GOTO(A11))	If no windows left, then end macro
5	=IF(INDEX(WINDOWS(),1)="Close&SaveAli",GOTO(A6),GOTO(A8))	If top window is this macro,
6	=ACTIVATE.NEXT()	activate the next window
7	=IF(INDEX(WINDOWS(),1)="Close&SaveAll",GOTO(A11),GOTO(A8))	If top window is this macro, skip it
8	=SAVE()	Otherwise, save it
9	=CLOSE()	and close it
10	=GOTO(A4)	Go check the next window
	=ECHO(TRUE)	
12	=MESSAGE(FALSE)	Erase advisory message
13	=RETURN()	End of macro

Close&SaveAll

This Excel macro closes and saves all open Excel

documents except the macro itself, without asking you if you want to save each one.

ures sizes. Then Shift-click to select another script and wait again while the *Installer* figures sizes. Repeat. Finally, after selecting all the scripts you want installed, click the Install button.

Jim McSpiritt Sayreville, New Jersey

All Torn Up

Tip: When I first started using continuous-feed paper, the tedium of tearing off the edges almost did me in. I've developed a system that about cuts the time in half. First, you fold the printed paper into a stack the way it came from the box. Then you loosely fold it in half lengthwise so the tear-off strips are together. Now you can tear off all the edges together, and lickety-split you're off doing something better with your time.

Stephen Bradshaw Indianapolis, Indiana

If you have a thick pile of printed pages, separate it into smaller stacks before applying this method.

Exporting Repeat Fields

Tip: FileMaker Plus has a Repeat command that lets you store multiple values in a single field. This is handy for such purposes as recording several orders on a single invoice or several locations or contacts for one company.

But exporting repeat fields to a text output file (using the Output To command) lumps all the values in the repeat field into a single text string preceded and followed by regular tab characters. In the text file, the multiple values are separated by a character with ASCII code 29 (hexadecimal 1D). This character appears as a box () in most word processors.

Few other database applications, if any, recognize the repeat-field separator

and put multiple values into separate fields. Double Helix, for example, doesn't accept the separator or the string that contains it.

You can work around the multiplevalue separator problem by using a word processor that can search and replace by ASCII code, such as *Microsoft Word* 3.01. Open the exported text file and replace every occurrence of the multiple-value separator with a regular tab character. In *Word*'s Change dialog, for example, type ^29 in the Find What box and ^t in the Change To box. Then click the Change All button.

It's also possible to change the multiple-value separator in *FileMaker Plus* itself. You can use ResEdit to make the change. Start by making a copy of FileMaker Plus and renaming the copy to distinguish it from the unmodified original. Next, open ResEdit. In ResEdit, find and open the copy of FileMaker Plus. Then find and open the resource WPIO = 0. This resource contains the hexidecimal numbers 0D09 0B1D (see "Separation Anxiety"). These are the ASCII codes, respectively, of the record separator, field separator, return character, translation character, and multiple-value separator. Change the 1D to the ASCII code (in hexadecimal) of the character you want to use as a multiple-value separator. Then close the windows, clicking Yes to save changes to the copy of FileMaker Plus, and quit ResEdit. The modified copy of FileMaker Plus will then include the new separator between multiple values when you output a text file.

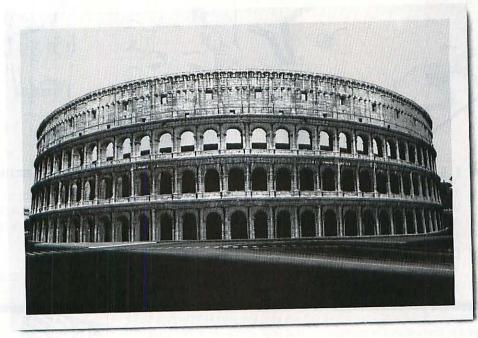
I used *ResEdit* to change the multiplevalue separator to an asterisk (ASCII code 2A) before exporting to a text output file.

(continues)

Great designers have never accepted the limitations of reality. Neither should yo



Reality.



Reality is notoriously uncooperative. Which is why designers have always taken liberties with it. And now, thanks to ImageStudio,™you can do the same.

ImageStudio is the image processing software that transforms your Macintosh™ into one of the world's most versatile retouching studios.*

A full complement of electronic artist's tools lets you handle everything from repair work on the Colosseum to airbrushed embellishments on your favorite illustration. Including softening or sharpening edges, changing brightness or contrast, scaling, cropping or rotating images, and more. And you get 64 shades of gray to work with.

Once you've improved on reality, you can put it to good use. ImageStudio not only

> accepts images from most scanners, it lets you use them in most page design software applications, including our own Ready Set Go! 4.0.™ And you can print them out on any Post-Script®-compatible printer.

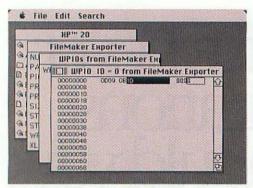
The result is brochures, newsletters, and other printed materials designed to truly professional standards. Made possible by Letraset, the world's leading supplier of tools for those who put words and images on paper.

So to throw off the bonds of reality, visit a Letraset dealer for a demonstration. For the dealer nearest you, just call (800) 722-0377.

Reality Improved by Image Studio.

Communication by design. *Requires a Macintosh Plus, SE or II. External disk drive required. Hard disk recommended. (c) 1987 Letraset USA. ImageStudio is a trademark of Esselte Pendaflex Corp. Ready Set Go! 40 is a trademark of Manhattan Graphics, Inc. PostScript is a registered trademark of Adobe Systems, Inc. Macintosh is a trademark of Apple Computer, Inc.

How To/Quick Tips



Separation Anxiety

You can change the character FileMaker Plus puts between multiple-value fields in an exported text file. Use ResEdit to change the 1D in FileMaker's WPIO = 0 resource to the ASCII code (in bexidecimal) of the separator character you want.

When I imported that file into Double Helix, I used a series of abacuses with Locate and Extract tiles to pull out the multiple values and store them in new fields. This

way, the process of transferring my data into the multiuser version of Double Helix does not suppress the multiple values in repeat fields.

> Gordie Sands Avon Massachusetts

Mouse Rest

Tip: In MacDraw you don't have to move the mouse all the way from the drawing window to the tools window and back again. If you are using a drawing tool, you can press the Enter key to change the tool pointer to an arrow pointer. Conversely, you can change the arrow pointer to the last-used tool: press # while you click.

Mobsen Hamed Zagazig, Egypt

Word 3.01 Page Setup

Tip: Microsoft Word 3.01 imposes its own Page Setup and Print dialog boxes. They don't include some of the special options in LaserWriter resources version 4.0 (and later), such as Precision Bitmap Alignment and Flip Horizontal. You can access the standard dialog boxes by pressing the

Shift key as you choose Page Setup or Print from the File menu (be sure to press and hold Shift before pulling down the menu).

> David E. Condit Warrenton, Virginia

Esoterica

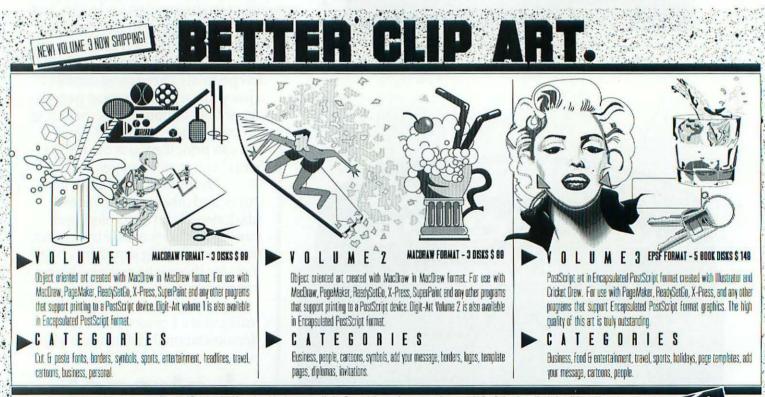
Tip: Have you ever wondered who did the programming on the Chooser and the Control Panel? To find out, click the version number of each of these desk accessories

> David E. Condit Warrenton, Virginia

SE Keyboard

Tip: With the Control key on the Mac SE keyboard you can now type characters that you could not type before. In the Chicago font, for example, press Control-Q to type the cloverleaf symbol on the # key, Control-R to type a check mark, and Control-T to type an Apple logo (see "Controlled Characters"). Most of the current

(continues)



Volume 1 - S 99 • Volume 2 - S 99 • Volume 3 - S 149

Volume 1+2 - \$ 168 • Volume 1+2+3 - \$ 299

We created Digit-Art with object oriented drawing programs like MacDraw and Illustrator for superior quality output with PostScript printers like the LaserWiter or Linotronic. Unlike jaggy "Paint" images, Digit-Art always retains perfect smoothness at any size, and are easily customized. Get the best clip art, Digit-Art Now available for the PCI

ORDER DESK

1-800-661-9410 In Canada call: 403-250-1969

VISA M/C AMEX OR ASK YOUR DEALER. All shipping is Federal Express cremight Please add STS for one nor This ad was created with Digit-Art images, and PageMaker and output on the Linotronic image Setter as you see it. All trademarks recognized a \$20 for my two or all dues

1-403-250-1969

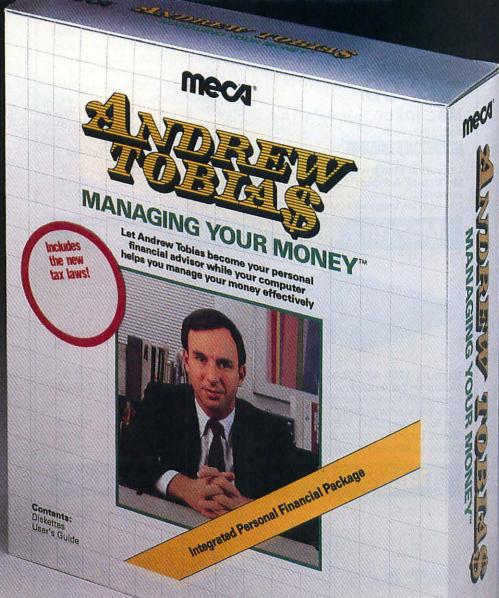
For more information and to order a S.S. catalogue (refundable upon purchase) Image Club Graphics Inc. #206 - 2915 - 19th Street N.E. Calgary, Alta Canada T2E 7A2

MacMANAGE YOUR MONEY WHILE YOU STILL HAVE SOME MONEY TO MANAGE.

Managing Your Money is the most comprehensive, easy to use, personal financial software tool available today.

It's everything you'll ever need, it's all you'll ever need, to master your own personal finances:

- PERSONAL BUDGETING
- CHECK WRITING
- NEW TAX LAWS
- TAX PLANNING
- INSURANCE PLANNING
- FINANCIAL ANALYSIS
- PORTFOLIO MANAGER
- NET WORTH
- HOME BANKING
- AND MUCH, MUCH MORE.



AVAILABLE FOR THE Mac IN JANUARY.

WAIT FOR IT!

meca:

© 1987 • MECA • 355 RIVERSIDE AVENUE, WESTPORT, CT 06880

Circle 702 on reader service card

Re-ink Your Printer Ribbon for Less than 5 cents



\$42.00
Mac Inker, Imagewriter I & II complete with free bottle of ink

Universal Mac Inker	68.50
Multicolor Adaptor* for 4 color band Imagewriter cartridges	
Shipping	
*fits both the Imagewriter Mac loker or the Universal Mac loker	

Mercury and Capricorn Modems



All our modems are 100% (guaranteed) Hayes compatible and have a 2 years warranty. Full, front panel control lights, auto answer, auto dial, auto repeat, call progress monitoring and speaker control.

MAC INKER™, the automatic

ribbon re-inker. Over 100,000

tridges and spools supported -

sold - over 11000 printer car-

with the Universal unit. Our dark dot matrix ink, lubricated

and solid-free, yields a truly

cessories, special inks and cartridges: UV resistant, indel-

inking technology and are

better than new print quality and

helps extend print head life. We have a full range of optional ac-

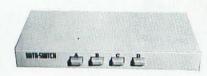
ible, OCR, heat transfer. Color:

red, green, blue, yellow, purple, brown, orange, silver, gold. In 1982, we pioneered ink and re-

committed to its advancement.

Mercury 1200 AT 300/1200 baud	149.00
Mercury 2400 baud	249.00
Capricorn World Minimodem. 300/1200 baud,	
pocket size with Bell 103/212A	
& European CCIT V.21, V.22 standards	169.00
Quick Link Communications Software (if purchased with Modem) .	15.00
Cable to Modem (specify Macintosh type)	15.00

Data Switches for the Macintosh



Special Offer

When you order more than \$100 tell us in which magazine you saw this ad and we'll give you a free key beeper, keychain and flashlight combined, a \$15 value!

MS4-MAC, 4 port, 9 pin female connectors mounted50.00
MS4-MAC8, 4 port, 8 pin,
DIN-8 connectors (for the Plus,SE and MAC II)50.00
SCSI Switch - 2 port46.00
SCSI Switch - 4 port59.00
Cables15.00

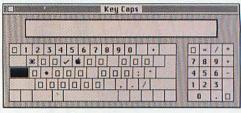
Order toll free 1-800-547-3303 In Oregon (503) 626-2291

CEmputer Friends, Inc.

14250 SW Science Park Drive Portland, Oregon 97229 Dealer Inquiries Welcome

Circle 271 on reader service card

How To/Quick Tips



Controlled Characters

Pressing the Control key on the Mac SE and Mac II keyboards lets you type previously inaccessible characters.

Apple fonts have no visible characters in these spaces, but many other fonts do. *David E. Condit Warrenton, Virginia*

Improve MacDraft Print Quality

Tip: To improve the quality of a printed *MacDraft* 1.2a document, save the original document and then double the scale, using the Layout Menu. For example, if the original scale was 1" = 100', change to 1" = 50'. Before printing, choose Page Setup from the File menu and select a 50 percent reduction. When you print, the reduced text looks normal rather than "computer generated."

By the way, when opening documents created with an older version of *MacDraft*, you must select the Tall Adjusted option in the Page Setup dialog if you're using an ImageWriter. Otherwise, the screen view of a single page appears about one inch too wide. What's more, the printed copy has its horizontal scale compressed and that extra inch of drawing area does not print.

Jerry Jenkins Birmingham, Alabama

Heavyweight Paper Champ

Tip: I hated my ImageWriter II when I first got it. Tractor-feed paper became crooked after several pages and tore, no matter what. I went to several dealers, and none of their service departments could help me. They said the unit was fine, and couldn't even duplicate the problem. Finally one technician suggested I use heavier paper. I switched to 20-pound bond, and now everything is fine.

Mike Conley San Diego, California

(continues)

Sallagain, Sain,

A Star Is Born. . .

Introducing "Draw It Again, Sam;" the new object-oriented drawing program that brings flexibility and a new creative dimension to your computer graphics.

"Draw It Again, Sam" shares many of the same impressive features of other drawing programs like MacDraw and MacDraft. But "Draw It Again, Sam" is unique.

The End of "Clip Art" hassles

Only "Draw It Again, Sam" lets you create your own text and graphic libraries. With a click of an on-screen symbol or by menu selection you can access and run through limitless libraries. This revolutionary feature allows you to store and retrieve frequently used art, text, or logos. No more hunting through scrapbook files. No more repetitive drawing. And no more wasted time.

Color Separations Made Easy

Say goodbye to long production time and say hello to "Draw it

Again, Sam's" ten layered drawing planes. With this feature you can produce color separations or cell animation quickly and easily. The possibilities here are endless.

Amazing Graphic Flexibility

"Draw It Again, Sam" is the only drawing program that uses "Quick Draws" drawing modes to their fullest potential. Imagine creating magnificent visual effects like pattern combinations, inversions and see-through objects. The countless colors and shapes achieved with "Draw It Again, Sam" are breathtaking. Graphic feats like these are

virtually impossible with other drawing programs.

"Draw It Again, Sam" even lets you manipulate objects limitlessly after they're drawn! It takes full advantage of the high resolution available on many of today's printers and, being object oriented, requires far less storage room.

With Sam's limitless libraries ten layered drawing planes and Quickdraws drawing modes, you're on the road to stardom. To find out more, or to order your copy of this amazing new program, call (215) 644-3580 and say, "Draw It Again, Sam."

Call or write:

SOFTUBE

Aba SOFTWARE, Inc. P.O. Box 850, Two Davis Avenue Frazer, PA 19355-0915 (215) 644-3580

Requirements: Macintosh™ 512E, Plus, SE, or II.

Suggested Retail Price: \$150



"Draw It Again, Sam" © copyright 1987 Aba Software, Inc. all rights reserved. MacDraw, Quickdraws and the MacIntosh models are registered trademarks of Apple Computers, Inc. MacDraft is a registered trademark of Innovative Data Design Inc.

Circle 212 on reader service card

SEE NACHORLD CISCO
SEE NAGAN FRANCISCO

Macss

Macintosh STATISTICAL SYSTEM

COMPLETE STATISTICAL PACKAGE WITH DATA MANAGEMENT AND GRAPHICS

- · Unlimited size of data files
- Double precision calculations, mainframe speed
- · Complete statistical data-base management with spreadsheet
- Comprehensive selection of Descriptive, Basic, and Nonparametric statistics
- Crosstabulation/Frequency Tables
- General Multiple Regression with Forecasting (up to 50 predictors)
- General ANOVA/ANCOVA (up to 10 within/between factors)

- General MANOVA (up to 100 dependent variables)
- Discriminant Function Analysis
- Contrast Analysis
- Graphics and Exploratory data analysis
- Flexible import/export of data and output
- True Macintosh user interface (not a mainframe adaptation)
- HFS compatible, not copy protected

Available from your dealer or from StatSoft (\$245 plus \$5 shipping/handling)



StatSoft Tulsa, OK 74104

2325 East 13th Street (918) 583-4149

VISA

Circle 225 on reader service card

Do your publications look old and dull? Are your I's dropping and A's Sagging?

Before





After

Get rid of the wrinkles in desktop publishing with a face-lift from

omplementary

Our new collection of display typefaces will tighten up the appearance of all your printed communications, giving them a more modern, professional look. Complementary Type faces can be **automatically downloaded** from a Macintosh[™] to a **PostScript**® printer. Every font includes foreign language diacritics and is not copy protected.

Choose from 13 exciting new looks on seven disks:

- FATTI PATTI Cut Outs VERIGO Hobnob Fletcher Gothic

Bodettes - 100s of borders

- *Highland Gothic *H.G. Light *Peruta Light *Peruta Medium
- · Nouveau · Kasse
- Calculus MICHELLE



Call for information and ask about our custom logo service. (717) 491-2492, 2495

How To/Quick Tips

Text Wraps Text

Tip: Normally, ReadySetGo doesn't allow wrapping text around other text. You could use MacDraw to create the text to be surrounded and then import the text into ReadySetGo as a graphic (text can be wrapped around a graphic).

There's an easier way to convert text to a graphic. First, create the text using a standard Text Block, Make all the adjustments you need to the text, such as adding style options or changing the point size. Then, when the text looks exactly the way you want it, select the text block (not the text itself) and copy it into the Scrapbook. This converts the text block into a graphic block. With the Scrapbook still open, copy again. Finally, close the Scrapbook, prepare a graphic block, and paste.

> Bill Jastram Tualatin, Oregon

LaserWriter Test Ban

Tip: I've got a very simple way to stop the test page that the LaserWriter prints whenever you turn it on-without resorting to PostScript commands. Just pull the paper cassette tray out far enough to disengage the feed mechanism, approximately one inch. Then turn on the LaserWriter. Wait until the green light stops flashing and remains constant, indicating that warm-up is complete, then shove the tray back in. This trick sure has saved me a lot of paper, as well as a lot of aggravation from feeling powerless to prevent the test sheet.

Chuck Wegner Neillsville, Wisconsin

If you'd rather "fix" the LaserWriter permanently with PostScript commands, the June 1987 Quick Tips describes how you can use MacTerminal to do so.

We pay \$25 to \$100 for published tips. Send tips or questions to Quick Tips, Macworld, 501 Second St. #600, San Francisco, CA 94107. Send electronic mail to CompuServe 70370,702 or The Source BCW440. All published submissions become the property of Macworld.



For Your Convenience

Why do more work than you have to? Microsoft® Works gave you word processing, spreadsheets, and a data base. But don't you still wish you had an "automatic time-saving device" to take care of the everyday, repetitious typing?

Get the WorksPlus Command program. With its pre-programmed commands, you can eliminate much of your repetitive typing. With the touch of a single

Microsoft® is a registered trademark of Microsoft

Corporation.
WorksPlus™ is a trademark of Lundeen & Associates
Macintosh™ is a trademark licensed to Apple Computer, Inc.

Macintosh™ command key, you can

- Select a style rule
- Set up multi-column labels from a data base
- Generate a table of contents or an index
- · Log on to a time-sharing service

and much more.

Once you see how easy it is to use, you can also use WorksPlus Command to create your own commands. You don't need to be a programmer. Simply record the keystrokes or mouse clicks and you have an "instant" command.

Of course, if you have a programming inclination, WorksPlus Command pro-

Circle 601 on reader service card

vides a full programming language for your convenience. Create your own complex macros to do your bidding at the touch of a key.

Put your time to your advantage instead of striking the same keys over

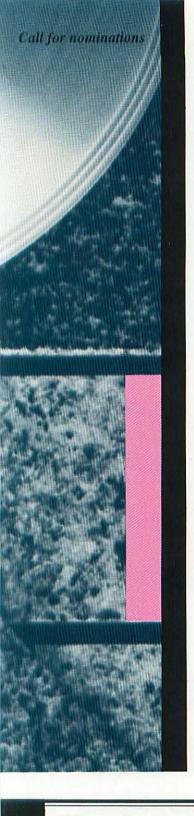
...and over

... and over.

(Suggested retail price is \$99.95.)



Lundeen & Associates P.O. Box 30038 Oakland, CA 94604



Second Annual Andrew Fluegelman Award 1988

Purpose

The Andrew Fluegelman Award is given annually to encourage personal computer software excellence and to recognize a software programmer or team of programmers. We are looking for people who have made a substantial, innovative contribution to the personal computer community in commercial, shareware, or public-domain software.

The award was established in 1986 by PCW Communications, Inc., to commemorate Fluegelman's contributions to the software field. Fluegelman developed *PC-Talk*, the first easy-to-use and powerful communications program for the IBM PC. His concept of freeware remains one of the most innovative means of sharing and marketing software. Fluegelman died in July 1985, and a fund was established in his name. The annual award, sponsored by PCW Communications and the Software Publishers Association, is made possible through the Andrew Fluegelman Fund.

Eligibility

Any commercial, shareware, or public-domain personal computer software developed by an individual or a team—including utilities, applications, and languages—is eligible. The program must have been released between January 1, 1984, and December 31, 1987. Nominations can be submitted by anyone who did not participate in the software's development. Companies are encouraged to submit nominations for software that they market; but only individuals, not companies, are to be nominated.

Prize

The award winner will receive \$5000 and a commemorative plaque. The award will be presented at the Software Publishers Association annual awards dinner in California in March 1988.

Judging

Each program will be evaluated according to the following criteria:

- It advances the state of the art of personal computing.
- · It manifests innovation in concept and design.
- · It demonstrates orientation to personal computer users.

Selection of Winner

The award recipient is selected in a two-step procedure. First, an independent screening committee will review nominations and select the finalists. Second, a panel of judges will evaluate the work of the finalists. From these, one award recipient will be selected.

Deadline

Nomination entries must be postmarked no later than February 1, 1988. Mail to: Andrew Fluegelman Award, PCW Communications, Inc., 501 Second Street, San Francisco, CA 94107.

For further information, please call Shirley Gines at: 415. 978. 3367.

Program Copies

Finalists will be asked to submit six copies of their program for the judges' evaluation. These will be returned after judging. Please do not send programs until you are notified that you are a finalist.

1988 Andrew Fluegelman Award

Please type your entries; no handwritten entries will be accepted. If you need more room, attach additional pages.

Send six completed copies of this form to:

Andrew Fluegelman Award Attention: Shirley Gines PCW Communications, Inc. 501 Second Street San Francisco, CA 94107

Name of program:		
Creator (if more than one, designate team leader): _		
Software marketer:	Release date:	
Brief desciption of program (100 words or less): _		
Reason for your nomination (100 words or less): _		
Nomination submitted by:		
Address:		

Insights on SuperPaint

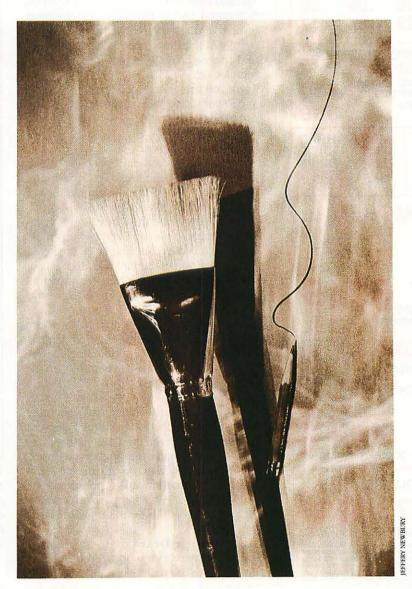
Twenty tips for souping up SuperPaint

by Erfert Nielson

SuperPaint combines two schools of Macintosh graphics-the MacPaint method and the MacDraw method. The program combines bit-mapped and object-oriented graphics, smoothly integrated in two overlapping layers. While SuperPaint improves upon MacPaint by offering such features as a larger drawing area, scrolling tools, and multiple windows, it doesn't provide all of MacDraw's capabilities. SuperPaint owners who have used MacDraw or other Mac drafting programs may pine for features such as arrowheads, dotted lines, hairlines, and rotated text. Enterprising users have come up with innovative solutions (kludges in computer parlance) for these deficiencies and others. An enhanced version of SuperPaint that will address many of the current version's shortcomings is reportedly in the works, but in the meantime, the following tips will help you squeeze more performance out of both layers of SuperPaint. Thanks are due to SuperPaint users Joe McKenzie, Richard Moore, and Robert Eckhardt, and to Ken Jones of Silicon Beach Software's technical support staff.

The Layered Look

SuperPaint's two-layer approach can be confusing at first. When should you use the paint layer? When is the draw layer more appropriate? Many users stick to the draw laver almost exclusively. For one thing, the draw layer offers superior printing results, taking advantage of the Laser-Writer's 300-dots-per-inch (dpi) resolution, gray scales, and PostScript fonts. The paint layer, on the other hand, prints a literal pixel-by-pixel representation of what's on the screen, at a resolution of 72 dots per inch. The draw layer also gives users the ability to freely modify objects-a shape can be stretched, shrunk, or filled with a different pattern at any time. In the paint layer, once an object is drawn it's simply a pattern of dots.



But the paint layer offers some advantages, notably pixel-by-pixel precision. Tools like the pencil and the spray can offer artists the ability to create freehand effects impossible in the draw layer. What makes *SuperPaint* special is its ability to include both methods in a single drawing, letting users work in the style they prefer.

I'd Rather Be Scaling

SuperPaint lets you copy drawings from one layer to the other. One way to combine the assets of both layers is to scale a paint illustration in the draw layer.

(continues)

SONY.



Boxed in tens

3½" SS **1.05** ea., 100 + 3½" DS **1.52** ea., 100 +

SONY MAC PAC



Packaged in fifties

100+ 500+ 1000+

SONY LABELS 46 each, minimum 50

TONER CARTRIDGES

For Hewlett Packard, Canon and Apple Laser Printers ... \$84
For Hewlett Packard LaserJet Series II ... \$89

RIBBONS

SOLD IN SIXES
Black 2.40
Color 3.00
Icolor 6-packs include one each; red



HARD DISK DRIVE

HD45.\$1198

MAC • MODEM

2400 BPS External, Hayes compatible Modem



Complete package includes modem, RS232 MAC cable and communication software.

MAGNAVOX

14" Multi-sync Monitor

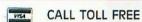


COMPATIBLE WITH

MAC SYSTEMS

Green text

• Green text
• Up to 926 x 580 resolution
• Multimode text/graphics design





1 800 872-3539

Technical Service 1 (312) 351-7172

TERMS: Minimum order \$100. Shipping / handling additional. Visa, MasterCard and Prepald orders accepted. Corporations rated 3A2 or better & government accounts are accepted on a net 30 basis. C.O.B. orders under \$500. add an additional \$5.00 special handling charge. (C.O.B. orders be be imprinted with buyer s name and address. We ship to the 50 states. APO. FPO. AK, and Hi orders add an additional \$510.00 special handling charge. All Checks must be imprinted with buyer s name and address. We ship to the 50 states. APO. FPO. AK, and Hi orders add an additional \$510.00 to to tail order amount to cover PAL and insurance. No sales tax outside of IL. All returns must have prior authorization from our customer Service Dept. 11-312-351-9700. Unauthorized returns and refused shipments are subject to 20% restocking charge. If you prefer sending in your order. please call first for shipping/handling charges. All prices/specifications are subject to change without notice. Ici COMARK/USA & FLEX. 1987

COMMRK/USA#FLEX

135 N. Brandon Dr., Glendale Heights, IL 60139 COMARK/USA + FLEX is an equal opportunity employer.

Circle 134 on reader service card

How To/Insights

While you can scale a drawing in the paint layer, the result is sometimes a muddy jumble of pixels, especially if a drawing is scaled to less than 50 percent of original size. Since the draw layer is capable of printing at a resolution of 300 dpi on the LaserWriter (four times that of the paint layer), images created in the paint layer can be scaled to 25 percent of their original size in the draw layer without losing any pixels.

To accomplish this, select a paint image and choose Copy To Drawing from the Edit menu. Delete the original in the paint layer so it doesn't obscure the draw-layer image. In the draw layer, select the object and choose Scale Selection from the Edit menu. Click on 25%, or type in a percentage if you prefer—but don't enter a percentage lower than 25 if you want to keep all the pixels in the reduced version.

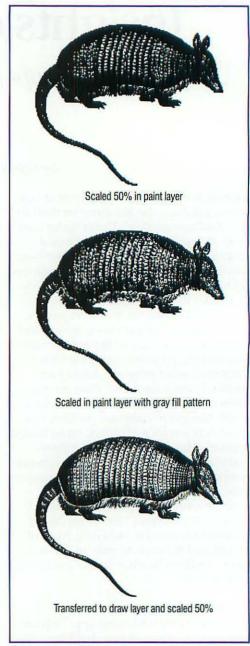
Paint Remover

You may occasionally wish to scale a drawing in the paint layer. The following technique will improve the appearance of images reduced in this layer.

To prevent the unsightly glob of compressed pixels that can occur when an image is reduced in the paint layer, create a. screen that wipes out half the pixels, resulting in a crisper image when the drawing shrinks. First, select Paint On Black from the Paint menu. This option covers only black pixels with the selected pattern, leaving white areas intact. Select the image to be scaled, click on the middle gray in the gray-scale pattern palette (eighth from the left, bottom row), and choose Fill from the Paint menu. Half of the black pixels turn white. Now, with the image still selected, choose Scale Selection from the Edit menu and click 50% in the resulting dialog box. The reduced image, although not as crisp as if it were scaled in the draw layer, looks much better than if you'd simply scaled the original image. For a comparison of scaling techniques, see "Three Scaling Options."

A Storage Drawer

If you're working on a complicated illustration in the paint layer and need space to work on a detail or two, you can temporarily copy part of the painting to the draw layer, giving you a clean space to work in. Select the section you wish to move, press **%**-E to copy it to the draw layer, and erase the original in the paint layer. Then choose Hide Back Layer to obscure the image in the draw layer. When you're ready to



Three Scaling Options

Scaling a picture in SuperPaint's paint layer compresses the pixels, darkening and blurring the image. Applying a gray screen to the image helps, but for best results, transfer the picture to the draw layer and scale it there.

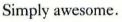
retrieve the stored section, go to the draw layer, select it, and transfer it back to the paint layer with **#**-E. This method is quicker than using the Scrapbook as a holding area.

(continues)

Value Line's new software:

For the complete investor.

Don't let un-integrated investment software break you up. Try VALUE/SCREEN Plus. It seamlessly joins together the three critical investment management functions.



-TJ.M.

Amazingly complete.

-B.A.L.

A quantum leap forward. -J.A.H., Jr.

A valuable, easy-to-use, foolproof tool. —C.R.R.

Well done and very useful. -R.S.E.

Microsoft Excel and Jazz are among the popular spreadsheets to which VALUE/SCREEN Plus can be linked.



Lotus 1-2-3 and Symphony are registered

Circle 591 on reader service card



Stock Selection

You specify the criteria your stocks should meet. You push a button. VALUE/SCREEN Plus instantly screens its entire database and provides full reports on all the stocks that meet your criteria, however demanding.

Portfolio Management

You enter stock ownership information and combine it with Value Line's investment data and projections. You push a button. VALUE/SCREEN Plus stores the portfolios and gives you formatted or customized reports

Spreadsheet Files

You select the stocks and data you want to analyze in your spreadsheet software, such as Microsoft Excel or Jazz. You push a button. VALUE/SCREEN Plus instantly loads any of this data into your spreadsheet files.

\$39 Trial

If you act right now we'll send you the complete software package—which regularly sells for \$95 for only \$39. What's more, we'll include 2 monthly data disks worth \$29 each, absolutely free. And there are no timesharing charges, since up-todate data is mailed to you regularly on disk.

I have an IBM two-month trial		K, and want to take the \$39
I have an Apple the \$39 two-me		east 512K, and want to take
My check for \$	39 is enclosed (1	NY residents, add sales tax)
Please bill my Visa		American Express
Account #		Exp. Date
Signature		
Name		
Address		
City, State, Zip_		
Purchase is n offer is availa	onrefundable, and ble only once ever	nonassignable. This Special v two years per household.

800-654-0508

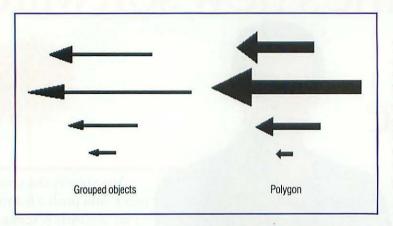
Value Line Software 711 Third Avenue, NY,NY 10017

(Dept. 65RH01)



Flexible Arrows

You can create arrows in SuperPaint's draw layer by grouping a line and a triangle, but arrows look better when resized if they're made with the polygon tool.



Animation Aid

Another unusual use of *SuperPaint's* two-layer approach applies to animation. If you create animations with Beck-Tech's *MacMovies*, which strings together a series of *MacPaint* pictures to produce frame-by-frame animation, you can use *SuperPaint* to produce smooth transitions from one frame to the next. To produce a smoothly animated sequence, first create an object in *SuperPaint's* paint layer and press \$\mathbb{R}\$-Shift-3 to take a *screen shot*—a *MacPaint*

document that records what's on the screen. This screen shot will be frame 1 of your animation.

Next, copy the object to the draw layer and, remaining in the paint layer, use *SuperPaint's* Nudge commands to move the object in one-pixel increments. In this case, the paint layer acts like a piece of tracing paper, showing the object's original position in the draw layer and its new position in the paint layer. When the object is in position for frame 2, choose Hide Back Layer to hide the draw layer, and take another screen shot. Continue this procedure until you've shot an entire movie.

A Few Pointers

Many people use SuperPaint's draw layer to create flow charts, organizational charts, or technical drawings. But unfortunately, SuperPaint doesn't include a built-in supply of arrows for those drawings. It's easy enough to create your own arrows by grouping a straight line with a triangle for the arrowhead. You can store a collection of homemade arrows in the Scrapbook for easy retrieval, pasting the appropriate arrow into a document and duplicating it, rotating it, and so on. But problems arise when you try to resize such an arrow; the line width stays fixed, but the head undergoes unattractive contortions. There's a better way to build an arrow. Turn on the grid to help keep sections aligned, and draw an arrow as a single object with the draw layer's polygon tool. You can then stretch and shrink it with little distortion ("Flexible Arrows" shows the results of resizing the two arrow types).

Dots and Dashes

Another feature found in many drawing programs but not in SuperPaint's draw



layer: dotted and dashed lines. Fortunately, it's easy to make your own. Simply select a line pattern, click the Line indicator (the leftmost box on the pattern palette), and draw a line with the straight-line tool. If the existing patterns don't provide the right spacing between dots or dashes, create your own patterns and apply this technique.

Hairlines

The thinnest line you can select in Su*perPaint* is one pixel wide. Some designers want the precision of hairlines-lines of less than a pixel. Unbeknownst to many users, SuperPaint offers two ways to create hairlines. The first method requires a bit of experimentation but does work once you get the hang of it. From the bottom row of the line-pattern palette, select the fourth pattern from the left for a vertical line or the fifth for a horizontal line, click the Line indicator, and draw a single-pixel line. Then use a Nudge command to move the line up or down (if it's a horizontal line) or sideways (if it's a vertical line). Nudge the line until it disappears on the screen, then nudge it one more pixel and print the results. If you're not satisfied, try nudging it

two pixels after it disappears. A simpler technique for drawing hairlines is to enter LaserBits and draw a single-pixel line, which will be reduced when printed. Although this method is easier, you can create only short line segments because of LaserBits' 2- by 2½-inch size restriction.

Pseudo-Footers

If you want to add page numbers or other footers to a *SuperPaint* document, you can trick a line of text into printing below the normal bottom page margin. In the draw layer, type a line of text at the bottom of a document. Then place the cursor at the beginning of the line and hit Return. This forces the text just below the drawing area, giving you a little extra space for the document. (Warning: Versions of the LaserWriter earlier than 4.0 may cause a system error.)

Big Changes

People who switch from *MacPaint* to *SuperPaint* may be unaware that the latter's Flip and Rotate commands can operate on an area larger than the screen. Unlike *MacPaint*'s selection rectangle, or *marquee*, *SuperPaint*'s paint-layer marquee scrolls the screen when it hits an

edge, allowing you to select up to an entire page at once. While you can flip a pagesized image horizontally (mirror image) or vertically (upside down), the program won't allow you to rotate a large image left or right if the image won't fit on the page when tipped on its side. You may also be surprised to learn that Paint menu commands such as Free Rotate, Stretch, Distort, and Slant work with large selections as well. Unlike the Edit menu's Rotate Left and Rotate Right, Free Rotate may rotate a large object right off the edge of the page. Don't worry, though-the Undo command will come to the rescue if you inadvertently rotate part of a drawing into oblivion.

Rotated Text

One of *SuperPaint*'s most innovative features is LaserBits, an option that lets you work pixel-by-pixel at a resolution of 300 dpi rather than at the screen's normal 72 dpi. Each pixel in the screen image is replaced by a 4- by 4-pixel square, allowing you to make minute changes that show up when the image is printed at the Laser-Writer's 300-dpi resolution. LaserBits

(continues)



Announcing the publications you really

We've just rendered your current Macintosh media schedule obsolete. Because now, we publish the *only* two magazines you really need to reach — and own — the entire Macintosh market.

Macworld, of course, leads the way and is the #1 monthly Macintosh periodical with a circulation reaching 200,000 in January. It's aimed at all educated business market users: From government to universities, from science to home to businesses of any size. It's instructional, with an average of 20 in-depth product reviews per month. It's comprehensive, with departments including Macworld News, Verbatim, New Products, a variety of "how to" articles, Macintosh Best Sellers, even Where to Buy information. Because of all this, it's become a "must" media buy in reaching the wide Macintosh audience.

And now, there's *Macintosh Today*. It's the premier newspaper for news and information for the Macintosh market. Reaching users in large and medium size companies.

It delivers late-breaking news and product announcements, along with the hottest information to keep its readers on top. It provides solutions to personal computing problems, commentary on emerging industry trends, as well as updates on desktop publishing, office automation and desktop communications.

The 1-2 media punch of these synergistic PCW publications will give you unparalleled Macintosh market clout. So buy them together now, and we'll even give you a joint media discount. And you'll own the entire Macintosh market, for less.

Call us today at (415) 546-7722. Ask for Jim Martin, V.P. and Group Publisher. We'll make your job easier while your Macintosh media dollars work a lot harder.

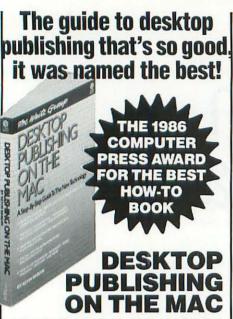
Pc W PCW Communications, Inc.
An IDG Communications Company



only two Macintosh need to own the market.







A Step-by-Step Guide to the New Technology By KEVIN RARDIN/The Walte Group

A Mac and a LaserWriter printer isn't enough—if you don't know how to use them. And until now, there hasn't been a straightforward, user-friendly guide that leads you through all the steps of desktop publishing. But with DESKTOP PUBLISHING ON THE MAC, you can go from minimal knowledge on the subject to the ability to produce sophisticated finished printed projects, from forms and memos to newsletters and magazines.

In easy-to-understand language, it shows you how to put any type of manuscript into print, complete with professional-quality typesetting and complex illustrations. This practical guide covers—

- what hardware and software you'll need
- transformation of ordinary word-processing into typesetting
- reation of graphics and camera-ready art
- page composition and layout
- how to integrate Microsoft® Word, MacDraw," MacPaint," and PageMaker® into a compete desktop publishing system
- ▶ how to capture and use existing art with digitizers
 ▶ how to use the LaserWriter™ and Linotronic® 100 and 300 to create final camera-ready art you can take to the printer

and much more!

Written by a top computer book author and drawing on the expertise and experience of The Waite Group, it is already recognized as the essential guide by thousands of desktop publishers. Honored by the professionals as tops in the field, DESKTOP PUBLISHING ON THE MAC is the clear choice for anyone entering this exciting new area.

\$24.95 paper. At all bookstores, or use coupon to order direct

	RICAN LIBRARY	
Please ser PUBLISHIN handling pe	9, Bergenfield, NJ 07 ad me IG ON THE MAC at ar order. I enclose charge MasterCare	copy(ies) of Z5902 DESKTOP \$24.95 plus \$1.50 postage and sheck money order (no CODs
Card #		Exp. date
Signature_		
Name		
Address		
City	State	Zip
and numbe	imum of 4 to 6 week rs are subject to char	s for delivery. This offer, prices age without notice. Offer expires
1/31/88.		MC 12-87

Circle 773 on reader service card

How To/Insights

doesn't restrict you to the tedious process of changing one dot at a time, however. As the manual briefly states, all of *Super-Paint*'s painting and drawing tools work in LaserBits. What the manual doesn't mention is that you can use LaserBits to rotate text to any angle with the Paint menu's Free Rotate command. Because LaserBits operates at a higher resolution than the paint layer, text rotated in LaserBits looks far better than text rotated in the paint layer.

Here's how. Type a short phrase in the paint layer (remember that LaserBits can't operate on a section larger than 2 inches wide by 2½ inches high). Select the phrase with the marquee and choose New LaserBits from the File menu. In LaserBits, again surround the text with the marquee, choose Free Rotate, and rotate the text. You may need to touch up the text a bit in LaserBits, but one look at the same text rotated in the paint layer should sell you on the LaserBits method (see "A Few Words").

Scaling in LaserBits

LaserBits objects can be scaled up or down like other objects. To scale in Laser-Bits, select and open a LaserBits object from the draw layer (LaserBits objects are distinguished from other objects in the draw layer by hollow "handles") or open a new LaserBits file if none exists. Then simply select the object in the LaserBits window and choose Scale Selection from the Edit menu.

Multiple Pattern Palettes

SuperPaint offers four pattern palettes: miscellaneous patterns and textures, line patterns, gray scales for PostScript printing, and a blank palette to fill with custom patterns. Each palette contains 32 patterns, plus black, white, and no pattern. If 32 custom patterns isn't enough for you, you can alter existing patterns in the other palettes. If that still isn't enough, you can add palettes to the program with ResEdit. From the Desktop, launch ResEdit and double-click on System Folder, then SuperPaint Prefs, then PAT#. Finally, click on the empty palette to select it. Next, pull down the Edit menu and choose Duplicate (or press #-D) once for each blank palette you want. When you return to SuperPaint, you'll see that all the palettes you duplicated are available as blank palettes.

Inverted Patterns

Here's a short tip, just for variety. To invert a pattern (change black pixels to white and vice versa), double-click on the pattern in the pattern palette to bring up the Edit



A Few Words

As you can see, rotating text in the paint layer provides unsatisfactory results. Rotating the same text in LaserBits greatly improves its readability. Cleaning it up in LaserBits makes it sbarper still.

Patterns box, hold down the **%** key, and click the left-hand square in the Edit Patterns box.

Easy Pattern Pickup

You can shop for interesting patterns by running the pointer over a drawing until you find a pattern you like. Double-click on a square in the empty palette provided for custom patterns (or on an existing pattern you wish to change). When the Edit Patterns box appears, hold down the mouse button and move the pointer across the screen until a good-looking pattern appears in the box. Click the Save button and the pattern is added to your collection. This procedure works fine, except that the pointer moves in jerky, eight-pixel jumps. For added precision when cruising for patterns, hold down the Option key when you move the mouse to move in increments of one pixel rather than eight.

Oversized Patterns

SuperPaint's patterns are normally made up of 8- by 8-pixel squares—when you use a tool like the paintbrush or the paint bucket, the 8-by-8 squares mesh together to fill an area with a solid pattern. To create a larger-pattern square, perform the following steps. First, set the grid to 24 screen dots in the Grid & Rulers dialog

(continues)

BUSINESS & PR	ODUCT
Aegis Development	
Doug Clapp Word Tools	\$CALL
Affinity	
Tempo	\$64.00
Ann Arbor	
Full Paint	\$59.95
Fullwrite Professional	\$CALL
Batteries Included	
Battery Pack	\$27.00
Disk Tools Plus	
Thunder 1.1	
Berkeley Systems	
Stepping Out	\$59.95
Blyth Software	
Omnis 3+	\$279.00
Executive Assistant	\$CALL
BORLAND	

DIGORGE E.O	
Reflex Plus	
Sidekick w/phone	\$54.00
Furbo Pascal	\$62.00
Central Point	
Copy II Mac	\$24.00
Chang Labe	
C.A.T	\$197.00
Rags to Riches III 3 pak	\$287.00
Cricket	
Cricket Draw	\$159.95
Cricket Graph	\$129.95
Statworks	
Data Tailor	
Trapeze	\$169.95
Dataviz	
Mac Link+ w/cable	\$149.00
Dubl-click	
Calculator construction se	
Wet Paint vols 1 & 2	\$49.95
World Class Fonts Bundle	\$49.95

Sidekick 2.0 \$59.00

Foundation Publishing Comic Strip Factory......\$62.00 Hayes Smartcom II/Mac\$97.00 Layered

\$159.00

.\$219.00

\$67.00

.SCALL

\$115.00

Forethought

powerpoint....

LALYCICA	
Front Desk	.\$74.95
Letraset	
Ready Set Go 4.0	\$CALL
Living Videotext	
More 1.1	\$159.00
Macromind	
Video Works II	\$129.00
Macropak	

Translator to C for VIP Microsoft

101 Macros ...

Mainstay

Super 3D ..

Software Ventures Microphone 1.1

Multiplan	\$105.00
File	
Word	
Basic	\$87.00
Fortran	\$167.00
Chart	
Mindwrite Softv	vare
Mindwrite	\$79.00
Monomam	
Dollars & Sense	\$89.00
Odesta	
Double Helix	\$289.00
PCS	
Versaterm Pro	\$194.00
Versaterm	
Satori	
Bulk Mailer	\$109.00
Bulk Mailer +	\$199.00
Legal Billing	\$329.00
Time Billing	\$389.00
Silicon Beach So	oftware
Silicon Press	\$44.95
Super Paint	\$54.95

VIII	
Springboard Certificate Maker\$29.95	Think Technologies
Target Software Medical or Legal Dictionary .\$64.95 Thesaurus\$32.00	T/Maker Click Art/Any Vol Write Now

GAMES & EDUCATIONAL

Avalon Hill	
MacPro Football	\$29.95
Broderbund	
Ancient Art of War	
The Toy Shop	\$39.95
Print Shop	\$49.95
Bullseve	
Ferrari Grand Prix	\$44.00
Fokker Triplane	\$44.00
Davidson & Assoc	ciates
Math Blaster	\$37.00
Speed Reader II	
W7	

ELECTRONIC	CARTS
Autoduel	\$33.95
Chessmaster 2000	\$29.95
OGRE	\$CAL
Patton vs Rommel	
Pinball Constr	
Scrabble	
Sky Fox	
Starfleet 1	
Ultima III	
Ultima III Cluebook	

EPYX	
Sub Battle Simulator	\$24.0
Microsoft	
Flight Simulator	\$32.9
Mindscape	
Balance of Power	\$30.00
Crossword Magic	\$32.9
Deja Vu	\$29.00
King of Chicago	
SAT	\$45.0
Uninvited	
DOLL	
Mac Golf	\$39.95
MacRaquetball	\$34.95
Silicon Booch	
Airborne	\$19.95
Dark Castle	\$29.95
Enchanted Sceptre	
World Builder	
Simon & Schuster	and the state of the state of
Typing Tutor III	\$42.95
Spectrum Holobyte	
GATO	\$28.00
Orbiter	
Falcon	

\$229.00 \$31.95 \$99.00

APPLE	
Macintosh Computers	\$CALL
Laserwriter	\$CALL
Imagewriter	\$CALL
MODEMS	
Everex	
2400 Baud,	
100% Hayes Compatible	\$CALL
Migent	
300/1200 Baud,	
100% Hayes Compatible	

Ehman Engineering 800K External Drive......\$189.00



Softstyle	
	\$149.00

Maccessories starter pak ...

Mouse cleaning kit & pocket\$16.00

\$53.00

Pocket Modem.....\$169.95

Beck-Tech	
Fanny Mac	.\$79.95
Blohard	
MACFAN	.\$99.95
Platinum Macfan	
I/O Design	
MAC+ Bag	\$69.95
Macintosh SE Bag	.\$79.95
Imagewriter Bag	
Imagewriter II Bag	
Innovative Concepts	
Flip-n-File Micro (holds 25)	\$7.95
Flip-n-File (holds 40)	.\$15.95
Kensington	
A-B Box	.\$59.00
Control Center	.\$59.00
Drive Cleaning Kit	.\$21.95

Mouse Pocket	56.95
Mouseway	\$9.95
Surge Supressor	\$32.00
Swivel	\$20.00
System Saver	\$62.00
Tilt/swivel	\$62.00
Turbo Mouse	\$77.00
N2	
Mac Cables \$call for price Summit	& config.
Imagewriter Ribbons Thunderware	\$5.95
Thunderscan	\$CALL

EDUCA FIONAL & CORPORATE ACCOUNTS:

We offer a full line of services catering to your needs. To reach our Educational & Sales Department Call 1-800-533-1131 Inside PA Call 814-234-2236

DISKS per box of 10 # Boxes

THE PROPERTY.		4 DOVOG	
3 1/2"	1-4	5-9	10+
SONY SS/DD	12.45	11.95	11.45
DD/DD	16.95	16.45	15.95
MAXELL	10000000		
SS/DD	11.95	11.45	10.95
DD/DD	17.95	17.45	16.95
FUJI			
SS/DD	13.45	12.95	12.95
DD/DD	18.45	17.95	17.45
VERBAT		199104	100
SS/DD	14.45	13.95	13.45
DD/DD	19.95	19.45	18.95

OPEN: 8:00AM - 9:00PM Mon - Fri, 10:00AM - 6:00PM Sat, 12:00PM - 8:00PM Sun East Coast Time

DON'T SETTLE FOR LESS



Software orders over \$50 & Accessories/Peripherals under 8 pounds will be shipped FEDERAL EXPRESS

(Yes even at these prices). You only pay TCP's standard shipping charge of \$4.00 per order. Orders arriving before 11:00 AM our time will be shipped out same day. If part of your order is backordered the remainder will be shipped UPS Ground for FREE.



HD21	SCSI	\$839.00
HD20	Serial Vers	sion\$849.00
HD32		\$999.00
HD45	SCSI	\$1279.00
Mode	m Option	\$CALL
Availa	able in Plati	num or Beige

Logic Array

ProApp	205	\$CALL
ProApp	405	\$CALL

MIRROR LECHNOLOGIES

Magnet	30X	\$869.00
Magnet	40X	\$995.00

Microsoft

EXCEL	.\$219.00
WORD V3.01	.\$229.00
WORKS	\$169.00

GRAPH\$129.95 STATWORKS ..\$79.95 DRAW\$159.95

Super Spool	\$47.00
Super Laser Spool	\$89.00
	\$47.00
DIGNILL	Ψ-11.00

SUPERMAC

SINGLE 20 Meg

Removable Bernoulli -SCSI \$1349.00 DOUBLE 20 Meg Removable Bernoulli - SCSI \$2079.00

Other Brands of HD's in Stock

If a product you want is not advertised, please call - it might be in stock

If through some oversight we don't have the lowest price, we would appreciate the opportunity to beat it. If we can, you will get the benefit of our Federal Express

shipping on software orders over \$50.00 We accept Mastercard, Visa, C.O.D., & Mail Orders. Your credit card is not charged until your order is shipped

Purchase orders are accepted from qualified corporations and institutions. Minimum order of \$50.00 required.

No sales tax on orders outside of PA

To order by mall: We accept money order, certified check, personal check. Allow 2 weeks for personal & company checks to clear. Shipping: \$4.00 for software and accessories/\$10.00 for printers and color monitors/\$8.00 for disk drives and other monitors/ Add \$3.00 per box shipped COD. Call for other shipping charges. Additional shipping required on APO, FPO, AK, HI.

Terms: ALL PRICES REFLECT CASH DISCOUNT, ADD 1.9% FOR MASTERCARD OR VISA. All products include factory warranty. ALL SALES ARE FINAL Defective items replaced or repaired at our discretion. Pennsylvania residents add 6% sales tax. Prices and terms subject to change without notice.

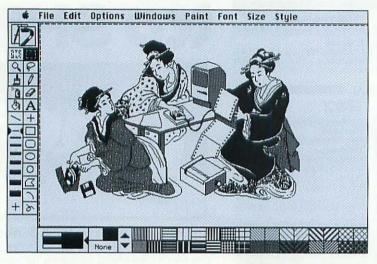
FREE

INFORMATION AND PA ORDERS 814-234-2236



Start-up Lineup

To avoid chopping off the top V₄-inch of a start-up screen, you must drag the image so its upper-left corner aligns with the upperleft corner of the fullscreen view.



box. Turn on Grid Snap and click OK. In the paint layer, create a pattern with any of the tools. Select one grid square of the new pattern with the marquee, hold down the Option and **%** keys, and drag the selection around the screen. The pattern is repeated in 24-pixel-square chunks across the screen. You can use the large pattern as a background or turn off the grid and carve it into smaller sections to place in a drawing.

Starting Up Is Hard to Do

You may have noticed an option called StartupScreen in the Save As dialog box. SuperPaint includes a handy utility that lets you make a custom start-up screen—the image that appears for a few seconds when the Mac is turned on—from any SuperPaint picture. The procedure is pretty straightforward. You open the document you want to substitute for your start-up screen, choose Preferences from the Options menu, and check the "Hide menus

when hiding palettes" option. This option allows you to see an entire screenful of a drawing, unobstructed even by the menu bar at the top. To preview your start-up screen, press #-F to select the full screen and **%**-H to hide the palettes. Then press ₩-F again to toggle out of the full-screen view, and save the document as a start-up screen. So far, so good? No-so far, so-so. When you start up your Mac and look at the new start-up screen, you might notice that the top quarter-inch of the picture has disappeared; the image fills the entire screen, but it's as if the original drawing were pushed upward a bit, obscuring the very top of the drawing. An extra step can alleviate this glitch. After you press #-F the second time, use the marquee to select a large chunk of the image, starting at the upper left-hand corner. Use the scroll bars to return the still-selected picture to its original position, then press #-F again to return to full-screen view. Grab the selection and align the upper-left corner with the corner where the menu bar and the tool palette intersect (see "Start-up Lineup"). Now, when you save the document as

(continues)



-MacWorld

From Coral Software, the developer of the first <u>full</u> Common LISP for <u>any</u> microcomputer, three

languages that bring symbolic programming to the rest of us: Allegro Common LISP, Coral LISP and Object Logo.

LISP and Logo, two of the most advanced programming languages in existence, are now available on the Macintosh in inexpensive, highquality implementations.

Allegro CL is the first and only implementation of the Common LISP standard for a microcomputer. It extends Common LISP standard from mainframes to the Macintosh. It's an indispensible tool for AI research and application production.

Coral LISP and Object Logo offer ideal environments for education and for exploration into the field of Artificial Intelligence. They are already in use at the Apple Vivarium project.

Each of Our Languages Offers:

object-oriented programming system with multiple inheritance

· fast incremental native-code compiler with dynamic linking

high-level Macintosh interface tools

Apple is a registered trademark of and Macintosh is a trademark licensed to Apple Computer, Inc. Object Logo, Coral LISP are trademarks of Coral Software Corp. Allegro CL is a trademark of Coral Software and Franz, Inc.

advanced symbolic and list processing capabilities • advanced math package: bignums, ratios, complex numbers • debugging tools: source-code stepper and trace facility • multi-window integrated editor • interactive, low-level Macintosh Toolbox access • excellent documentation, with complete cross-referenced index and comprehensive examples

Additional Features: Allegro CL • File

compiler • Window-based inspector • Integrated, programmable editor • Modest memory requirements: 1MB RAM, 1.6MB disk storage Coral LISP • File compiler • Dialog objects • Full lexical closures • Dynamic variables Object Logo • Turtle graphics with multiple, object-oriented turtles • Macintalk objects • Apple Logo compatibility • MIDI support available

Object Logo can be yours for \$79.95. Coral LISP is available for an introductory price of \$99.95. And Allegro CL sells for an unbelievably low \$599.95!

To order, call or write: Coral Software, P.O. Box 307, Cambridge, MA, 02142; (800) 521-1027, in MA, (617) 547-2662.



Coral Software: Where Limitations Are Left Behind

Still drawing "Pretty Pictures" with MacProject?

Those in the know have switched from MacProject to MICRO PLANNER PLUS. Apple's own software and hardware engineers have switched to MICRO PLANNER PLUS for mainframe power made easy on the Macintosh™.

From the Venus Orbiter to business startups, managers are switching to MICRO PLANNER PLUS to get projects done on time and on budget.

R.D. Warshawer, Planning and Scheduling Manager, GTE/Government Systems, Strategic Systems Division from his MICRO PLANNER review. "My evaluation of the software is that it is a superior package, very user oriented, with good documentation . . . The structure makes the maximum use of the Macintosh™ interface, allowing the user to become adept rather rapidly. Users who are familiar with the networking techniques will find this product falls between MacProject (a low-end planning tool) and Artemis (a super powerful mini/mainframe tool). In fact, this product appears to have similar functionality to the Artemis system . . . For those who find MacProject inadequate . . . and Artemis too much for their needs, MICRO PLANNER PLUS should be an excellent tool . . . One of the most important features . . . is the ability to save the 'plan' and assess progress against the plan as the actual work progresses. The lack of this capability is what makes MacProject's use extremely limited."

From 'Project Management' by Barry Keating, Macazine, June 1986 —"Carl Sanchez, Chief of Planning for the Launch Control Systems Divisions of Martin Marietta . . . As an

For Macintosh, individual who must both plan and control projects, he has used both MacProject and MICRO PLANNER PLUS (as well as mainframe versions of project management software such as Artemis). While he 'cut his teeth' on MacProject . . . Sanchez believes MICRO PLANNER PLUS to be a much more powerful tool for practitioners than Macproject. Many people at Martin Marietta use MICRO PLANNER PLUS not only for its power but because its learning curve is quite short . . . (less than a day for some people) . . . MICRO PLANNER PLUS has the best training curve of the project management software."

Another user who has switched from MacProject to MICRO PLANNER PLUS is Mike Krueger of Natural Intelligence . . . Krueger, like Carl Sanchez, started out using MacProject but soon found that his job required the sophistication found in MICRO PLANNER PLUS, MICRO PLANNER PLUS is . . . being used to develop the schedule for producing Natural Intelligence's first product . . . (software with an expert systems or artificial intelligence capability).

MacProject is a simpler tool . . . not designed to adequately handle . . . reconciling time . . . with resources. The logic of Macproject is nonstandard and may cause some early misunderstanding to experienced users.

Now it's easier than ever to move up to the power of MICRO PLANNER PLUS. MICRO PLANNER'S new PROJECT EXCHANGE module allows you to convert MacProject files to MICRO PLANNER projects. Move up from "pretty pictures" to sophisticated management.

Mainframe power made easy on the Macintosh™. \$495.00 (\$395.00 with MacProject trade-in)

See us at MacWorld San Francisco, booth #1024

For more information, contact your local dealer or the professionals at:

Micro Planning Software USA



235 Montgomery Street, Suite 840 San Francisco, CA 94104 (415) 788-3324

We offer full training and consulting. Available on IBM® and compatibles.

Circle 409 on reader service card

a start-up screen, the top portion will remain visible.

The Four Percent Solution

SuperPaint's two layers have caused Silicon Beach programmers untold headaches in the realm of printing. When SuperPaint was initially released, the LaserWriter printed bit-mapped drawings at 96 percent of screen size and objectoriented artwork at 100 percent. Silicon Beach compensated for this discrepancy, so both layers printed at 96 percent. But then Apple fixed the LaserWriter driver (version 4.0), which made the paint portion of SuperPaint print at 100 percent instead of 96 percent. If you have an old version of SuperPaint (1.0) and an old version of the LaserWriter driver (prior to 4.0), you should be OK. If you have the old SuperPaint and a new printer driver, the paint layer won't line up correctly with the draw layer when printed. Don't worry; the solution is not as complicated as the problem. The latest version of SuperPaint-1.0p-fixes the paint/draw printing discrepancy. To update your disk, you can download a patcher utility from a number of user groups and online services including AppleLink, ARPANet, BIX, Compu-Serve, and MacUnderground.

A Bleak Landscape

Many *SuperPaint* users have found themselves unable to print in Landscape (horizontal) mode. Why? The answer is simple: because it's not possible. Unfortunately, the option isn't grayed—it looks as if you should be able to print. The only solution is to wait for the upcoming *Super-Paint* upgrade; a Silicon Beach representative says this problem will be fixed.

A Smooth Answer

Is it taking what seems like forever to print a document? Try turning off Smoothing in the Page Setup dialog box. An unsmoothed drawing often prints substantially faster than the same drawing with Smoothing turned on. (Note: draw layer objects are by nature smoother than paint objects because of the draw layer's 300-dpi printing capability; create illustration elements in the draw layer whenever possible.)

Page Setup Options

For those who patched their copy of SuperPaint to work with LaserWriter printer driver version 4.0, printing Laser-Bits at the highest resolution can be tricky. Here's how. In the Page Setup dialog box, turn off Smoothing and Faster Bitmap Printing. Then press the Options button and turn on Precision Bitmap Alignment. Selecting Larger Print Area is also necessary if your document has images touching the right or bottom edges. Also make sure you don't have too many downloadable fonts.

Mac II Fix

Are you having trouble displaying *SuperPaint* correctly on your Mac II monitor? If so, open the Control Panel and set the monitor to two-color mode.

Your Two Cents

If you have a *SuperPaint* shortcut or tip that we haven't uncovered, send it to us. We pay \$25 to \$100 for tips published in the *Quick Tips* column. Send your contributions to *Quick Tips, Macworld,* 501 Second St., San Francisco, CA 94107. □

See Where to Buy for product details.

Shipping



Clone Your Modem

For less than the cost of another modem, you can offer telecommunications services to everyone on your AppleTalk® network. With ComServe™, you no longer need a modem at each Macintosh™—with all the accompanying wiring complexities and line charges.

- Gain network-wide access to modems, mainframes, and minis.
- Eliminate dedicated hardware. ComServe transparently runs in the background of a Mac. And, its AppleShare™ compatible.
- Save, at \$195 per server. Share expensive, high-speed modems.

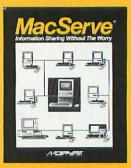
Call now or ask your dealer for ComServe. From Infosphere, the only full-family AppleTalk software vendor.



4730 SW Macadam Ave - Portland OR 97201

1-800-445-7085

ASK Adout Offer!





Still the Best for Small Nets

Still only \$250 per hard disk server for as many user nodes as you like—still the only file sharing solution that offers "Bulletproof" Automatic Crash Recovery so users never lose data. MacServe™ is the most practical choice for small AppleTalk® networks. And that's why MacServe is still the leader with over 30,000 installations.

- Forget dedicated Macs. MacServe runs in the background.
 Grow a network transparently. Add Macs. PCs. hard disks.
- Grow a network transparently. Add Macs, PCs, hard disks, servers, printers, modems and E-Mail, as you need them.

Call now or ask your dealer for MacServe. From Infosphere, the only full-family AppleTalk software vendor.



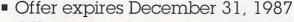
4730 SW Macadam Ave - Portland OR 97201

1-800-445-7085

Circle 249 on reader service card

FREE! agemaker* OFTWARE!

That's Right! If you pre-purchase \$700.00 of Printing from the S. L. Graves Company we will give you FREE Pagemaker*, or Scoop*, or Express*, A retail value of over \$500.00! Additionally, we will give you FREE access to our \$15,000.00 Computer Art Library, FREE access to our Bulletin Board. FREE 2400 Scan Line Linotronic* Laser composition out-put, and most importantly, CHECKS FREE access to our 200 Postscript* Screen Fonts Library valued at \$10,000.00. 9 Why buy printing or 00000000 forms from anyone else? When we will reward you for making the right decision. FREE Delivery . . . Call us Today! Offer expires December 31, 1987



- Offer limited to the first 1,000 customers
- Offer not valid to printing companies

S. L. Graves Company Inc. **Printers Since 1946** 609-931-5900

This ad was composed with Desk Top Publishing Software.

- * Pagemaker is a TM of Aldus, * Scoop is a TM of Target Software
- * Express is a TM Quark Corp., * Linotronic is a TM of Linotype,
- * Postscript is a TM of Adobe.

The Microtech Super Stars

ONOVA 20/30/50

High Performance Power for less
Superior Speed for less
Quality and Reliability for less

Macintosh Plus and Macintosh SE Compatible 512K Compatible with the Microtech SCSI Port (call for pricing)

 NOVA 20
 \$599

 NOVA 30
 \$729

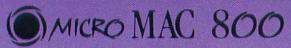
 NOVA 50
 \$999

All Nova SCSI hard disk drives come preformatted and ready for use. Now available in the original Mac color or new platinum color.

MICRO MAC 30/45

Introducing the Micro MAC 30 and 45 now as Internal Hard Disks for the Macintosh SE

You can't beat Micro MAC's Quiet, High Speed, State of the Art Technology, now even more subtle than ever hidden internally inside your Macintosh SE. The unique "Micro Lock" head locking feature, a step beyond auto-park, allows you to maintain your Mac SEs portability without risk. Installation is quick and easy.



The First 800K Floppy Disk Drive Introduced for the Macintosh Computer Ouiet, Versatile, Dependable

128K, 512K, and Macintosh Plus Compatible



MICRO MAC 30 \$689
MICRO MAC 45 \$899
Additional savings with 800K trade-in



MICROTECH MEMORY EXPANSION KITS

One Megabyte SIM Modules
In DIPS and Surface Mount Technology

For the Macintosh Plus and Macintosh SE Computer

800-325-1895 In Conn.: 203-488-8993 Dealers call: 800-626-4276



29 Business Park Drive/Branford, CT USA 06405

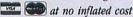
Micro MAC, Micro Lock, and Nova are trademarks of Microtech International, Inc.

Macintosh is a trademark of Apple Computer, Inc.

MICROTECH EXTRAS

Prices subject to change

ONE YEAR WARRANTY on all drives
TECHNICAL SUPPORT call TOLL FREE
FREE SHIPPING UPS ground in Continental U.S.



Circle 470 on reader service card



Publish!

Same

Kalle



Publish!, The How-to Magazine of Desktop Publishing, can show you how to hang on to a lot of that money.

You'll know what to buy, when to buy it, and how to make the most of your desktop publishing system.

You retain control, get instant response, bring your products to market faster,

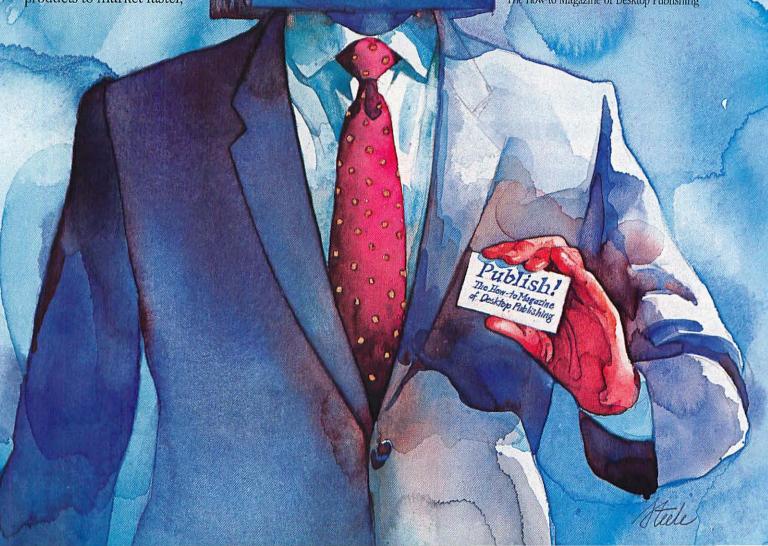
and save money.

3.5 trillion pieces of paper are printed each year in the U.S. A lot of them wind up in the trash.

Publish! shows you how to create crisp, clear, graphically interesting materials. Worthy of saving! You start with an empty page and end up with applause.

Special subscription rate: \$23.95 for one year. Call 800-222-2990 to order. 5AAO

Publish!
The How-to Magazine of Desktop Publishing



THUNDERSCAN FACE-OFF.





WHICH SCANNED IMAGE COST NEARLY TEN TIMES MORE TO PRODUCE?

It's tough, isn't it. They both look great. But the image on the left was digitized by a scanner that costs over \$2,000. The image on the right by ThunderScan.* The scanner that replaces ImageWriter's* ribbon cartridge. Just \$249 complete.

Now, we'll admit, the more expensive scanners are faster than ThunderScan. But what we lack in speed, we make up for in software power. And that can actually save you time in the long run. Because with ThunderScan there's no rescanning an image to get it right.

ThunderScan saves true gray shades. So once an image is scanned, you can change it any way you want. As many times as you want. Control contrast and brightness. Create special effects. Take your image at face value or enhance it to your art's desire.

ThunderScan also gives you true halftones. So you can tap the full resolution of your printer. (We tapped the Linotronic® 300 for the above images, but you can use your ImageWriter™ or LaserWriter™).





Use LaserWriter to create line screens

Now you can plug high-resolution halftones into your PageMaker,® Quark XPress™ or ReadySetGo!™ documents. Or use your scanned images with painting and drawing software like Illustrator™ and LaserPaint.™

ThunderScan's special effects include straight line screens, rotations and frames. Plus, you get a lasso for working with irregular shaped areas. And with our new Power Port,™ ThunderScan is Macintosh™ Plus and SE compatible, right out of the box. No wonder ThunderScan was recently voted "Best Digitizer/Scanner" in *Macworld's* first annual World Class Awards.

So if you want a sophisticated, high-resolution scanner and like the idea of saving money, the choice is as plain as the nose on your...well, you get the picture. Now get yourself a ThunderScan.



Thunderware 21 Orinda Way, Orinda, CA 94563 (415) 254-6581

*ImageWriter, Wide Carriage ImageWriter and ImageWriter II. Macintosh, ImageWriter and LaserWriter are trademarks of Apple Computer, Inc. PageMaker is a registered trademark of Aldus Corporation. XPress is a trademark of Quark, Inc. ReadySetGol is a trademark of LaserWater, Inc. ReadySetGol is a trademark of LaserWater, Inc. © 1987 Thunderware, Inc.

Mac System Tools

A do-it-yourself guide to installing Mac II memory

by Franklin Tessler

The first time I got a peek inside a Macintosh was when I had my 512K upgraded to a Plus. I felt like a kid peering over the shoulder of a TV repairman, gazing into forbidden territory. The manual made it clear that opening a Mac was one of life's riskier undertakings: Do not remove the Macintosh cover. No user-serviceable parts inside. As if to drive the point home, Apple made sure that special tools were needed to open the case.

But the Macintosh II is different. Open. Friendly. The lid's held on by just one small screw and it's probably there just to satisfy some government regulation. When I was recently offered a memory upgrade for the Mac II in my office, I decided to avoid a trip to the dealer and install it myself.

Why Add Memory?

Why bother with more RAM? After all, the one megabyte that is now standard in all Macs is a whopping eight times the memory the computer had when it was first introduced in January 1984. Back then, all applications had to make do with less than 128K or they simply wouldn't run. Even after the debut of the 512K "Fat Mac" later that year, programmers continued to make sure their software would work on the more common smaller machines. Nowadays, programs that run on a 128K Mac are rare; most programs require at least 512K of memory, and applications that demand at least one megabyte aren't unusual. Apple's own HyperCard won't run on a 512K, for example. On the Macintosh II, displaying gray-scale and color images places an even greater premium on RAM, with fullscreen images consuming more than 300K apiece.

If just one application puts a strain on memory, consider what happens when you try to run two or more of them under MultiFinder. MultiFinder is such a natural extension of the Finder that it's liable to gain a much wider acceptance than *Switcher* ever has, especially when programs that can perform tasks in the background become commonplace. Although you can use MultiFinder with only one megabyte on board, it needs at least twice that much to be really useful.

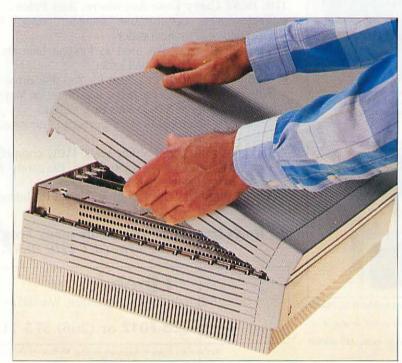
Another way to increase efficiency with additional RAM is through the Mac's built-in memory cache, which you adjust with the Control Panel desk accessory. The cache sets aside an area of memory in which applications can store frequently used-data; this reduces the number of disk accesses and boosts speed of operation. The manual recommends that the cache

be set to no more than one-quarter of installed memory, or 256K on a standard Macintosh II. Even with a small cache, though, the increase in performance can be dramatic.

Extra memory can also be configured as a RAM disk, which fools the computer into using a portion of memory as a very fast phantom drive. Unlike the cache, which stores chunks of data, RAM disks are typically used to store entire files. With either method, however, you run some risk of losing data if the system crashes or power is interrupted. Still, in many applications the increase in speed is well worth it.

Because the RAM chips in the 128K and 512K Macs were permanently soldered in place, adding memory usually meant altering or completely exchanging the sys-

(continues)





Macworld

Mixing Memory

The table shows four ways of configuring memory in a Mac II. When higher-density chips become available, you'll be able to have as much as 128MB on the main board.

Mixing Memory		
First Four Slots	Second Four Slots	Total Memory
four 256K SIMMs	empty	1MB (standard)
four 256K SIMMs	four 256K SIMMs	2MB
four 1MB SIMMs	four 256K SIMMs	5MB
four 1MB SIMMs	four 1MB SIMMs	8MB

tem board. Since the introduction of the Macintosh Plus, memory now comes on separate plug-in circuit boards called SIMMs, short for Single In-line Memory Modules. Each one has a capacity of either 256K or 1MB, depending on the type of chips used. Both the Mac Plus and the SE come with 256K SIMMs in each of their four memory slots (a total of 1MB). If you replace these SIMMs with 1MB modules, you expand your total memory to 4MB. The Mac II has slots for eight SIMMs—in the standard 1MB configuration, four of them are occupied by 256K modules. You can expand on the basic setup by placing four

more SIMMs in the empty sockets, by swapping the 256K modules for 1MB boards, or by combining both (see "Mixing Memory"). Another way to add memory to the Mac II is through NuBus cards in the expansion slots—at present, though, the Macintosh OS (operating system) can't address more than 1MB per card.

SIMMs are available from Apple, as well as from several third-party manufacturers: Dove, Levco, Mass Micro, Mac Memory, Microtech International, and Hard and Soft. Since RAM chips are ranked by speed as well as by storage capacity, you should be sure to specify your Macintosh mode when ordering. For example, the 150-ns (nanosecond) chips that work fine on the Mac Plus will cause system crashes on a

Macintosh II, which requires chips rated at 120 ns or better. The higher-capacity 1MB SIMMs are also more expensive than four 256K chips. For example, a 1MB upgrade from Apple now costs 40 percent more when higher capacity chips are installed. As costs continue to fall and competition heats up, 1MB SIMMs may become more affordable, especially when higher-density chips become available.

Installing SIMMs

Now, what about installation? In my case, I was given an Apple 1MB upgrade consisting of four 256K SIMMs. Apple's kits don't include any instructions, just the warning that you void your warranty if you don't opt for dealer installation. Still, I was able to work my way through the procedure without too much difficulty. If circuit boards make you squeamish, I suggest you have the work done by a qualified service technician, especially if the Mac is still under warranty. But if you want to try it yourself, here are a few tips based on my experience.

(continues)

MacBag™ SE, Plus, 512



MacPakTM also available in backpack version. PrintBag carry case for Imagewriter.

MacFreighter™



- Professional shipping cases for Mac II, SE, Plus or custom made.
- Check your computer on airline or ship it on ahead with confidence.
- Full keylocks, two butterfly locks, ABS framed with aluminum & steel.

Choice of Professionals

THE BEST Carry Case Anywhere, Any Price...

- Professional, comfortable shoulder sling. Not painful little pad sold by mail order.
- Closed cell foam like used in football helmets. Not cheap sponge foam sold by mail order.
- Well padded accessory pouch for 2nd disk drive and modem with pocket on back for paper and manuals. Many mail order cheap bags have NO pockets or pouches.
- Inside 3/8" foam dividers for keyboard, mouse and hard disk drive.
- Designed to fit under airline seats. Many competitors won't.
- Available in attractive colors Navy, Burgandy & Gray that won't show dirt like black.
- We put hard shell in bottom and in lid for bump protection.
 Many mail order bags use cardboard.

Don't trust your Mac to the many "rag" bags being sold now. GET THE BEST.

Linebacker

643 Industry Drive, Seattle, WA 98188

1-800-228-7042 or (206) 575-1180

MacCover is a registered trademark, MacBag, MacPack are pending.

MacBag™ Extended



MacBag for new Saratoga keyboard.

MacCovers®



The best material for dust covers. New nylon breathes, anti static, water resistant, attractive.

Diskwallet



Rich vinyl leather works so much better than nylon. Carries 20 plus

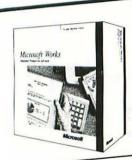
1-800 MAC-ONLY

Doing Business Since 1980 A Division of CW Marketing, Inc.

No Charge for Federal Express

No Charge for VISA or MasterCard No Additional Charge





Microsoft Works Shipped Federal Express

Microsoft® Works makes it easy to get started with your Macintosh™ system, because it has all the computing tools you need, all in one place. So you can write. Organize information. Analyze numbers. Chart your results. Communicate with other computers. All from a single program. All easier than ever

Nothing helps you analyze and work with numbers better than Microsoft® Excel for Apple® Macintosh™

It's the most formidable spreadsheet ever to run on a personal computer. With extraordinary business graphics and a built-in database, it's the most powerful spreadsheet available on any personal computer.



Microsoft Excel

Shipped Federal Express

Microsoft Word Shipped Federal Express

No other personal computer word processing program lets you take a document from start to finish with the speed and ease of new Microsoft Word for Apple® Macintosh™ systems.

Display and editing speed is impressive. And Word's wealth of features make creating and revising documents fast and easy. Features like integrated outlining, integrated style sheets, page preview, and spelling corrector.



Microsoft and the Microsoft logo are registered trade marks of Microsoft Corporation. Apple is a registered trademark and Macintosh is a trademark of Apple Computer, Inc.

\$218.00

Shipped Federal Express

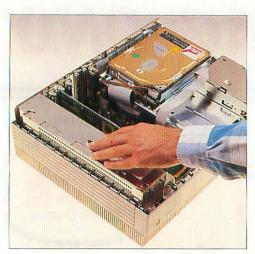
Flight Simulator

..... \$32.00

Shipped Federal Express

Malling Address: 8804 N. 23rd Avenue/Phoenix Arizona 85021

- To Place an Order: 1-800-622-6659 To Follow Up on an Order: (602) 944-1037 10a.m-3p.m. Mon.-Fri.
- Order Line Hours: Mon-tri, /a.m.-óp.m. Saturday 9a.m.-1p.m Alaska Orders: Call (602) 944-0402
- No Charge for VISA and Mastercard
 All product corries a manufacturers warrantee. All Guarantees, rebates,
 trial period priviledges & premotional programs are handled by
 the manufacturer only.



Step 5: Touch the power supply to discharge static electricity.

- 1. Make sure you have a large, welllighted workspace—the inside of a computer tends to be dark, even with its cover off.
- 2. Unplug everything (including the telephone) before starting.
- 3. Using a Phillips-head screwdriver, remove the screw at the back of the case

and lift off the lid by pressing on the tabs at the rear. As the front latches release, you'll hear a terrible sound that's as comforting as a fender grating against a concrete post. Ignore it. Put the screw and the cover aside where they won't be rolled over or stepped on.

4. Stare at the computer for at least five minutes and remind yourself that there's still time to stop and visit a service center. As the sign in the china shop says, "You break it, you pay for it."

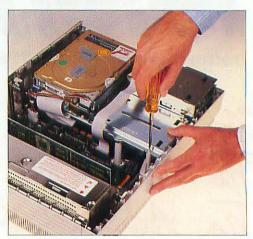
5. Touch the power supply case (at the left) to discharge any static electricity—and kinetic anxiety. If the Macintosh was on before you began, you'll be happy you waited five minutes.

6. The SIMM sockets are situated at the top right of the main board, under the cut-out metal sheet that holds the disk drives. If you have an internal drive, the sockets will be hidden by it. If not, you can install the modules without disturbing anything (though working through the holes in the bracket is awkward).

7. To remove the drive, take out the four screws holding the drive assembly in place, taking care not to let them disappear into the black hole found in every piece of electronic equipment.

8. Unplug the floppy and hard disk cables, noting how they're attached (see step 10 below). The internal SCSI cable is held down by tabs at each side of its connector

(continues)



Step 7: Carefully remove the screws from the disk drive assembly.

You can make this message obsolete.

Electronic communications weren't meant to hold you up, or to bog you down. You shouldn't have to own or even know how to use every piece of software



An application can't be found for this document.



your associates do, just to read, print and copy from documents they send you through an office network, electronic bulletin board, or e-mail system.

SuperGlue™ is the solution.

Finally, all you need to send or receive a newsletter, spreadsheet, memo, chart, etc. is your Macintosh® communications program and SuperGlue. (Your associate will need Glue or SuperGlue too.) With the new desk accessory, you can see the graphic while you're on line! You can overcome the frustration of receiving electronic newsletters or spreadsheets that have been created with fonts you don't have . . . using the new "font substitution" feature.

You can even choose to turn some part of the graphic message to ASCII so it can be sent to an IBM PC.

munications programs. It saves them time and money. It helps them get documents down the hall, around the country and across the world.

Easily, accurately and quickly . . .

Why not include SuperGlue in your communications? SuperGlue retails for \$89.95 and is available from your dealer or Solutions International.

29 Main St., P.O. Box 989 Montpelier, VT 05602 802-229-9146



Companies like Dow

Jones and MCI, Pacific

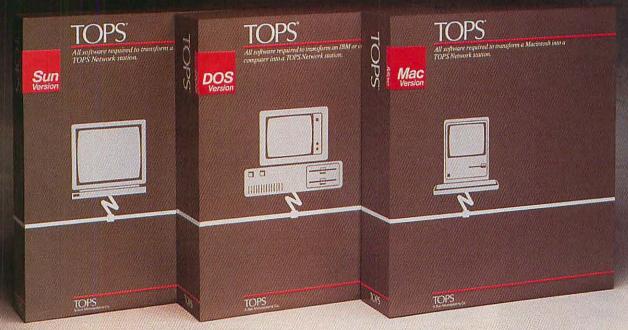
Telephone, Apple and Associated Press have

licensed Glue to use in

their Macintosh com-

SuperGlue is a trademark of Solutions, Inc. Macintosh is a trademark of Apple Computer, Inc. SuperGlue runs on any Macintosh with a minimum of 512K.

NODE WARRINGS.



or many people, using their Local Area
Network is like a journey across 500 miles of
bad desert, with strange, unforeseen forces
of destruction lurking behind every turn.
Until now that is.

Because now there's TOPS, a revolutionary departure in LAN design. TOPS fully arms each node with local user control of information, and frees you from the grips of costly central file servers—and even more costly network administration personnel.

TOPS' unique design gives users completely transparent access to files anywhere from any operating system on any computer—anywhere in the network. And TOPS' modular design supports new operating systems as they become available. Users become believers, because TOPS is so easy to operate. All its commands are totally intuitive.

TOPS is also easy to install and support, and there's no downtime necessary when adding new users. You just plug them in. And because there's no central file server you avoid data crashes and bottlenecks. Your LAN will be stronger than ever, and faster too, because users communicate directly with each other.

Reinforcements!

TOPS Version 2.0 does everything the original does, then adds a few extras all its own. Like automatic publishing and mounting of folders and volumes. Access to locally attached PC printers by other networked PC users. Compatibility with Apple Filing Protocol, and FlashTalk™ speed (it's three times faster than AppleTalk in PC to PC communications). Translation of PC files to Mac format and vice versa. And a lot more.

And price? No need to worry, because it won't put you into deficit spending. TOPS is just \$189 per node for Macintoshes and PCs.

So call 800-222-TOPS (US), 800-445-TOPS (CA), for a free Node Warrior button and more information. It'll tip the balance of power in your direction.

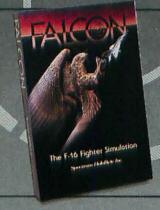
TOPS°

A Sun Microsystems Company 2560 Ninth Street, Berkeley, CA 94710

Registered trademark: TOPS, Sun Microsystems, Inc. Trademarks: FlashTalk, Sun Microsystems, Inc.; AppleTalk, Macintosh, Apple Computer, Inc.

Circle 524 on reader service card

SUPER SIMULATION SERIES



THE F-16 FIGHTER SIMULATION

Climb into the FALCON cockpit and fly a highly realistic simulation of the F16A Fighting Falcon. Perform fighter maneuvers while engaging enemy MiGs in dogfights DR go head-to-head against another player via computer link. Realism is captured by use of sound and digitized airplane images.

sound and digitized airplane images, advanced radar mechanisms, authentic armament, and four alternating heads-up-displays. Multiple missions and skill levels will challenge you as you claim the skies as FALCON territory!

Assilable on Macintosh 512K (Macintosh Pus compatible) and IBM 256K



IBM. Version

WORLD WAR II SUBMARINE SIMULATION

GATO puts you in the control room of a WWII combat submarine to perform missions in the South Pacific. The positions, courses, and maneuvers of the sub and all ships are continuously calculated and displayed in real-time simulation. Multiple assignments and increasing levels of difficulty will challenge

ing levels of difficulty will challeng your navigational expertise to outsmart the enemy and return from your mission.



Macintosh Version

Available on Apple #e or #a 128K, BM 126K, Macintosh 126K (Macintosh Plus compatible), Commodure 64K, and Atari ST





PATROL BOAT SIMULATION

Take the helm of PT-109 and command the highly maneuverable, daring WWII vessel on day and night assignments in the Pacific and Mediterranean. Use three 120-degree views and your full weapons arsenal of torpedoes, cannon, rockets, depth charges, and machine

guns to battle the enemy on the sea and in the air. Multiple skill levels, detailed damage reports, sound effects, and true-to-life 3-D enemy ships will keep you at your battle station for hours of excitement!

Available on Macintosh 512K (Macintosh Plus compatible) and IBM 256K



Macintosh Version

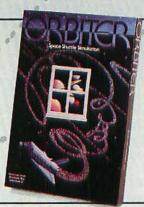
SPACE SHUTTLE SIMULATION

Lift-off with ORBITER and experience space travel as you control the space shuttle from launch to landing. Missions may be to launch, rescue, or repair satellites or the floating space laboratory. Dock with the space station. Walk in space in the MMU, and view the Earth

and other orbiting objects. ORBITER is both educational and challenging and gives you a glimpse of what being an astronaut entails.



Available on Macintosh 512K (Macintosh Plus compatible), IBM 256K, and soon available on Atari ST



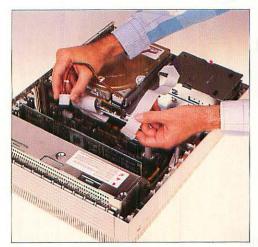
Spectrum HoloByte

2061 Challenger Drive Alameda, California 94501 (415) 522-3584

Circle 47 on reader service card

that have to be pushed sideways before it will disconnect. Slowly lift out the entire assembly.

You can leave the drives connected if you balance the drive bracket on its side,



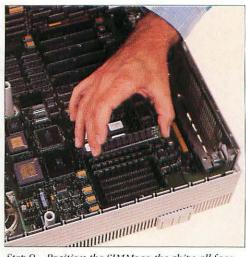
Step 8: Note the position of the two cables and then disconnect the disk drives before you lift out the assembly

but based on personal experience, I don't recommend it. It's also a good idea to back up the hard disk before you begin, just in case.

9. Install the SIMMs by gently pushing them into the sockets with the chips all facing toward the right. (If you're lucky enough to have the larger 1MB SIMMs, vou'll have to remove the 256K ones first. It's easier to insert modules than to take them out, so be careful.) The modules are held firmly by plastic tabs on their sides, and they click into place with a sound that's almost as reassuring as the one the lid makes. Make sure all the SIMMs are properly seated by touching them gingerly.

10. The final challenge is to put everything back the way it was. This is when noticing how all the cables were attached pays off. Make sure all the connections are tight before screwing in the drive assembly. (If you've been unfortunate enough to break something along the way, now is a good time to start thinking of excuses.)

That's all there is to it. To see if you've been successful, start up the Mac and look for the number in corner of the About the Finder dialog box. If all's well, you should



Step 9: Position the SIMMs so the chips all face the side of the Mac. Gently push them into place and then check that they're in securely.

see a value that's at least twice as large as any vou've seen there before. Congratulations. You're ready to reap the benefits of



This little battery can stop your computer dead.

Thanks to a little battery - one you might not even know it has-your computer knows a lot about itself. Such vital information as memory size, display card type, number and kind of disk drives, modem and printer port settings, all are maintained in memory by a battery. But when the battery goes, so

does the memory. You're left with the trouble and expense of reconfiguring



IBM® and IBM PC AT® are registered trade-marks of the International Business Machines Corporation Apple[®] is a registered trademark of Apple Computer, Inc.

the entire system, if you can. However, the times and dates at which you created documents - along with critical files - may be lost forever.

The new ACR Battery Monitor continuously checks the battery and, with a gentle chirping and flashing LED, alerts you to replace the battery soon. Available for Apple Macintosh, IBM PC ATs and compatibles, and most battery-maintained equipment, the palm-size, easily installed monitor keeps track of battery life so you don't have to.

Keep your computer from losing its memory. Order your Computer Battery Monitor now. Call 1-800-327-8068 to order or send this coupon:

dvanced Concepts Research, Inc.

This little monitor won't allow it to.

	Send me Computer Battery Monitors at \$49.95 (plus \$2.95 shipping and han- dling) each. I'm enclosing						
	(PA residents add 6% sales tax.)						
	My computer is:						
Apple Macintosh							
	IBM PC AT or compatible						
	MGRIDSOMM TA						
	Name						
	Company						
	Address						
	City						
	State Zip						
	Check Visa MC						
	Card #						
	Exp. Date						
į	Signature						
	Advanced Concepts Research 6 Pheasant Run, Newtown, PA 18940						

Drive a Hard bargain

- "You can easily fall in love with the quiet Jasmine drive... (It) ran flawlessly during the review period, with very good performance and no compatibility problems of any kind." - MacWorld, July 1987
- "This drive is a pleasure to use. With a 26 msec average access time, it is one of the fastest drives around... It almost makes you feel young again." Howard Bornstein - The MACazine, October 1987
- "Even though the Jasmine 80 is inexpensive, we could find no compromise in quality or features with this product. 99 - InfoWorld, June 29, 1987 (Overall Review Rating: 8.5)
- "The Jasmine Direct Drive 80 is an excellent value, offering not only outstanding price and performance, but an excellent price against the small disk market as well. InfoWorld highly recommends looking at this drive for your Macintosh." - InfoWorld, June 29, 1987



An unbeatable combination of quality, performance and price.

The acclaimed Jasmine Direct Drive 80 is the standard by which all others are judged. Powered by the incredible Quantum 80 MB hard disk drive, it has become one of the most desired Macintosh peripherals ever made. And, like all Jasmine products, a long list of "extras" come along for the ride. For the same performance in a 50 megabyte capacity, be sure to check out the Direct Drive 50, also powered by Quantum.

Remember that Jasmine saves you 40% or more. To order call (415) 621-4339.







Our prices include a Full One Year Warranty. Every drive is shipped with a technical bolline number to answer any questions. Direct Drive 50, Direct Drive 80, Jasmine are trademarks of Jasmine Technologies, Inc. Product specifications and prices are subject to change Prices include 2' cable and PD software. Prices do not include shipping, CA sales tax (6.5%) or special rush bandling. Apple is a registered trademark of, and Macintosh is a trademark licensed to Apple Computer, Inc.

Updates

This list brings you the highlights of software updates recently received but not yet tested. The first price is the upgrade cost for registered owners; the second is the current list price.

Anatool version 2.0 prints multiplepage diagrams and lets you indicate more processes on each one. The new version includes export capabilities. Advanced Logical Software, 9903 Santa Monica Blvd. #108, Beverly Hills, CA 90212, 213/659-5157. \$95; \$925 new.

Bridge version 5.0 bids in Standard American five-card major. Includes autobid and autoplay features, and saves hands for replay. Version 5.0 is faster and offers improved graphics. It can set up all hands and has three levels of point count for the opening hand. Installable on hard disks. Artworx Software, 1844 Penfield Rd., Penfield, NY 14526, 716/385-6120, 800/828-6573. \$12 with original disk, \$5 for backup; \$34.95 new.

Caliope Plus fixes bugs and adds a menu command for unlinking single ideas. Includes new manual. Innovision, P.O. Box 1317, Los Altos, CA 94023-1317, 415/964-2885. Free; \$99 new:

Design version 2.0 can create up to 9999-page diagrams. Features curved multisegment connectors, includes Undo and Hide/Show Status toggle commands, and can specify detail as unselectable. You can select between tiled, scaled-to-fit output, and PICT format.

New documentation included. Meta Software Corp., 55 Wheeler St., Cambridge, MA 02138, 617/576-6920. \$35; \$249 new.

DiskQuick version 2.10 is approximately 15 percent faster and has the ability to export data to databases and word processors. Ideaform Inc., P.O. Box 1540, Fairfield, IA 52556, 515/472-7256. \$15 plus \$1 shipping; \$49.95 new.

DiskTop version 3.0 includes a Find command and **%**-key equivalents. Allows you to run all files by double-clicking, and lets you set Get Info comments that aren't lost when rebuilding the desktop. LaserStatus and Widgets have also been improved. CE Software, 801 73rd St., Des Moines, IA 50312, 515/224-1995. \$10 plus \$2 shipping; \$49.95 new.

MacDraw version 1.9.5 loads faster and is *AppleShare*-compatible, with single-launch, multiuser capability. Includes zoom box, Cancel button in the printing dialog box, and more command keys. Compatible with the Mac II. Claris Corp., 20525 Mariani Ave. M/S 23-AL, Cupertino, CA 95014, 415/960-1500. Free; \$125 new.

MacNosy version 2 for the Mac II adds new system structures, symbols, and trap calls to handle new additions to the ROM, including color

(continues)



Telecom Software Review

1-800-622-8770

16 Day Leases on Mac Software All Fees Apply To Purchase Price

Canvas-23.90, Cricket Draw-42.90, dBase Mac-64.90, Full Paint-13.90, Games-7.90/up, GraphicWorks 1.1-15.90, McMax-38.90, MiniCad-74.90, PowerPoint-52.90, Rags To Riches-27.90, RSG4-61.90, ReflexPlus-32.90 Plus Hundreds Of Other Programs

> CMS SCSI Drives 20 Meg \$579 40 Meg \$779 80 Meg \$1325 MacScan LS 300 \$1257 FilemakerPlus \$147

Our Second Year for the Business Mac

TSR

8177 S. Harvard - Suite 336

MasterCard Tulsa, OK. 74137 Visa

Natl. 800-622-8770 In Ok. 918-496-1140

Call For Free Catalog And Rates

Circle 769 on reader service card

Give your ears a workout

Whether you're a beginning student or a professional, you can benefit from ear training. With Listen 2.0 and your Mac, you can create an ear training program to suit your needs.

Listen 2.0

Interactive Ear Training Software for the Macintosh

- Triads, 7th, 9th, 11th, and 13th chord exercises
- Inversions, intervals, simple and complex melodies
- · On-screen piano and guitar
- · Adjustable degree of difficulty
- · Full Mac and MIDI compatibility

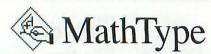
"A music educator's dream and a Mac musician's salvation."

-- Geary Yelton, Electronic Musician



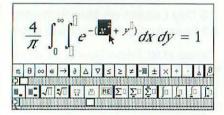
PO Box 996, Menlo Park, CA 94026 Check, money order, or MasterCard/Visa Order by phone: (415) 323-5022

Circle 632 on reader service card



The Mathematical Equation Editor for the Macintosh

Edit equations like this:



And get LaserWriter output like this:

$$\frac{4}{\pi} \int_0^\infty \int_0^\infty e^{-(x^2 + y^2)} dx \, dy = 1$$

MathType™ knows the rules of mathematical typesetting, so all you do is point, click, and type. Works with any word processor or page layout program. MathType is available now for only \$149. Educ. discounts applicable. Call or write for a free demo disk and brochure with sample output.



6475-B East Pacific Coast Highway, Suite 392 Long Beach, CA 90803 • (213) 433-0685

MathType is a trademark of Design Science, Inc. Macintosh and LaserWriter are trademarks of Apple Computer Inc.

Circle 606 on reader service card



KE-LOR manufactures 50,000 cases annually for dealers and major corporations. With our reputation for quality, we cannot afford to sell 'less than perfect' cases at full price. The above case meets all our high construction standards, except for a slight color difference in the grey Cordura used in the keyboard case. To order (with a 10 day full refund option) call (219) 289-7886 and ask for the 1801 series. Checks, money orders, COD, MasterCard or Visa accepted. Add \$3.50 for shipping and handling (cont'l. U.S. only).

Other specials

MAC - Reg \$99.75 Now \$47.50 Cordura MAC - Reg \$89 Now \$29 Luggage Vinyl Choice of Burgundy or Grey

Ke-Lor, Inc., 648 College Street South Bend, IN 46628

Circle 263 on reader service card

Updates

QuickDraw. Has the ability to disassemble the Mac II ROM, name more than 600 internal procedures in the ROM, and display text files up to 64K. The Debugger runs on the Mac II in single- or multiple-screen mode, and displays floating-point registers. Jasik Designs, 343 Trenton Way, Menlo Park, CA 94025, 415/322-1386. \$200; \$350 new.

MacProject version 1.2 is Apple-Share-compatible, with singlelaunch, multiuser capability. Compatible with the Mac II; supports color. Claris Corp., 20525 Mariani Ave. M/S 23-AL, Cupertino, CA 95014, 415/960-1500. Free; \$195 new.

MacSafe version 1.08 has more stringent security options that won't allow safes to be opened over a network or moved to another folder, disk, or the Trash Can. Allows you to transfer directly to other applications without returning to the Finder. Kent Marsh Ltd., 1200 Post Oak Blvd. #210, Houston, TX 77056-3104, 800/ 325-3587, \$5; \$149.95 new.

MacScan version 1.12 includes ten save formats, the ability to crop at a reduced view, use of two new tools, the ability to rotate, flip, or invert the image, and user-definable print options. Contains online help. New Image Technology, Inc., 10300 Greenbelt Rd., Seabrook, MD 20706, 301/464-3100. \$9.95, or free with return of original disk; \$99 new.

MacTerminal version 2.2 is Apple-Share-compatible, with singleuser launch and capability. Compatible with the Mac II and extended keyboard. Updates the operation of the Enter key in 3278 mode. See your Apple dealer. Free: \$125 new.

MindWrite version 1.1 includes a new Search and Replace feature that supports MacLightning, Has additional keyboard commands, an automatic file backup option, and a click-drag feature for selecting by word. MindWork Software, 9570 Carmel Valley Rd., Carmel, CA 93923, 800/367-4334. Free; \$295 new.

Quark XPress version 1.04 supports the Apple Extended Keyboard and imports Microsoft Word 3.0 documents. Maximum line leading has been increased, and Kern and Track menu entries allow precise specification. Manual kerning can override automatic kerning. %-key equivalents have been added. Non-copy-protected versions available. Quark Inc., 300 S. Jackson #100, Denver, CO 80209, 303/ 934-2211. Free within 90 days of original purchase; \$99 includes extended support and all upgrades; \$695 new.

> To have products listed in this section, send upgraded software, an outline of major changes since the previous release, upgrade price, suggested retail price, company name, mailing address, and phone number to Updates, Macworld, 501 Second St., San Francisco, CA 94107.

INTRODUCING 101 MACROS[™] FOR EXCEL[™]

Instead of This...



MAKE EXCEL EASIER — AND MORE POWERFUL

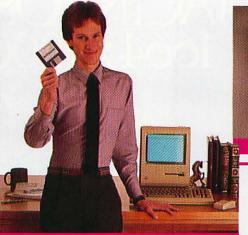
Now you can have your own on-disk library of shortcuts, utilities, keystroke savers and *mousestroke* savers that will work with *ANY* Excel worksheet. No more dull, repetitive operations, no more pulling down and clicking through multiple menus, no more hours wasted with manual input that could be automated.

Introducing the ultimate collection of 101 pre-typed, ready-to-use, all purpose macros on disk. Imagine being able to:

- Automatically double space and print a worksheet
- Set up and maintain data bases with a single command
- · Create slide show presentations
- Add menu-driven financial functions
- Automatically overlay and clean up all the worksheets on the screen with a single keystroke



With 101 MACROS FOR EXCEL you can save keystrokes & mousestrokes, save menu steps, save time and automate your worksheet. Whip through complicated menus and worksheet setups with a single keystroke. Eliminate repetitive operations with macros that will move down columns or across cells, changing each cell to your specifications. Operations that previously required several mousestrokes, like swapping columns or inserting rows, can now be done with single keystrokes.



With This. \$69.95 Retail

ELIMINATE FRUSTRATION

How many times have you had to go back to the manual to learn how to do some simple function that seems overly complicated in Excel? How often have you waded through charting, database operations and building tables? How often have you wished that you didn't have to wear out your arm reaching for the mouse to perform just about every operation? The macros in 101 MACROS FOR EXCEL help you out with everything from simple mousestroke and keystroke savers, to sophisticated, interactive macros which "walk you through" more complicated Excel operations.

EASY TO USE

These macros are extremely easy to use. Just load the macro sheet called 101 into Excel and you'll have all 101 macros available for instant use at any time.

By pressing the option key, the command key and a single letter, you can insert new rows that copy data automatically. Or enter long phrases instantly. You can even toggle the gridlines and headings on and off with a single keystroke combination.

EASY TO LEARN

101 MACROS FOR EXCEL comes complete with a comprehensive, step-by-step manual that includes a short tutorial chapter and explains each of the macros and how to use them. The macros are fully documented, so they're easy to review, change and learn from — which gives you an excellent starting point for writing your own custom macros.

Circle 653 on reader service card

You Can Do This...



FREE! HANDY REFERENCE GUIDE

Act now. For a limited time you get not only a complete collection of 101 macros with User's Manual, you will also receive a handy reference guide listing all 101 macros and their call-up keystrokes.

"Outstanding...the ultimate macro library."

- P. Antoniak, President, Solar Systems Software

"A must-have for Excel users."

- E. Sharp, President, Clarity Glass Inc.

"A great idea. . . what a time-saver!"

- A. Stein, President, Studio Silicon

ORDER 101 MACROS FOR EXCEL today!

NOT COPY PROTECTED 60-DAY MONEY BACK GUARANTEE

CHECK YOUR LOCAL DEALER

101 MACROS FOR	EXCEL
----------------	-------

Send me (\$12.50 outside		200	Transport of the Party of the P			
☐ I enclose _						
PA CONTRACTOR OF THE PARTY OF T			or—		_	
Please charge	CONTRACTOR OF THE PARTY OF THE					1
Credit Card E	xp. Da	te	-	/_		-
Card #	Ш				1	
		1		1	1	
Name						
Phone						
Company						
Address						
ou.		1940	6172	2000		

MACROPAC

19855 Stevens Creek Blvd., Suite 168 . Cupertino, CA 95014

1-800-624-0077

or 1-800-832-7766 (in CA)

Excel is a registered trademark of Microsoft Corp

OF THE MACINTOSH WORLD: 1664x1200



Fig. 140 then Spring

S I G M A D E S I G N S



When they say a picture is worth a thousand words, they're describing LaserView,™ ultrahigh-resolution largescreen monitors from Sigma Designs.

Available for the Macintosh™ SE and Macintosh II in 15-inch and 19-inch sizes, LaserView provides a 1664 x 1200 on-screen pixel display (equal to 11 Macintosh SE screens). And because

LaserView is a noninterlaced monitor, text and graphics are displayed virtually flickerfree. Even facing pages.

You can select the default display mode of 1664 x 1200 pixels (2,000,000 pixels). Or choose the standard Macintosh resolution of 72 dots per-inch which yields an onscreen pixel resolution of 832 x 600 (500,000 pixels). You can choose from three cursor sizes and two system font sizes for legibility.

For more information on LaserView, call Sigma Designs today at (415) 770-0100. Or visit an authorized Sigma Designs dealer.

Because for computeraided engineering, advanced desktop publishing and anything in between, LaserView offers you a totally new point of view.



Sigma Designs, Inc. 46501 Landing Parkway Fremont, CA 94538

LaserView is a trademark of Sigma Designs, Inc. Macintosh is a trademark of Apple Computer, Inc. For commercial use only.

Circle 743 on reader service card

Where to Buy

This section contains information about products mentioned in this issue. Programs are not copy protected unless otherwise indicated. All prices are list prices. An asterisk indicates that a product review appears in this issue.

Public domain software and shareware are available through online information services; user groups (call 800/538-9696 ext. 500 for information on a local user group); or mail-order clearinghouses such as Educomp, 742 Genevieve, Ste. D, Solana Beach, CA 92075, 619/259-0255, 800/843-9497, 800/654-5181 in California, or The Public Domain Exchange, 2074C Walsh Ave., Dept. 609, Santa Clara, CA 95050, 408/496-0624, 800/331-8125.

Pages 90 to 95

Looking through the Mac II Kaleidoscope

Apple High-Resolution Monochrome Monitor

Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. Requires Mac II and video card. \$399.

AppleColor High-Resolution RGB Monitor

Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. Requires Mac II and video card. \$999.

Macintosh II Video Card

Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014. 408/996-1010. Requires Mac II and monitor. \$499.

Macintosh Video Card Expansion Kit

Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. Requires Macintosh II Video Card. \$149.

Multi-Scan Frequency 770

Taxan USA Corp., 18005 Courtney Ct., City of Industry, CA 91748, 818/810-1291, 800/772-7491. Requires Mac II, video card, and adapter cable. \$895, cable \$45.

PCPC II

Personal Computer Peripherals Corp., 6204 Benjamin Rd., Tampa, FL 33634, 813/884-3092, 800/622-2888. Requires Mac II. \$4995.

Sony CPD-1302

Sony Corporation of America, Sony Dr., Park Ridge, NJ 07656, 800/222-0878. Requires Mac II, video card, and adapter cable. \$945.

Spectrum 1000/8

SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043, 415/964-8884. Requires Mac II and monitor. \$1495.

SuperMac 19" Color Trinitron Monitor

SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043, 415/964-8884. Requires video adapter card and Mac II. \$3695.

Thomson UltraScan

Thomson Consumer Products Corp., 5731 W. Slauson Ave. #111, Culver City, CA 90230, 800/325-0464, 800/237-9483 in California. Requires Mac II, video card, and cable. \$895.

Pages 96 to 103 Macintosh-Aided Design

CADMover

Version 1.1. Kandu Software Corp., P.O. Box 10102, Arlington, VA 22210-1102, 703/532-0213. 512K minimum memory; external drive recommended. \$499.

ColorMaster

CalComp, 2411 W. LaPalma Ave., Anaheim, CA 92801, 714/821-2000. Specifications to be announced. \$4495.

Dimensions

Version 1.18. Visual Information, Inc., 16390 Double Grove, La Puente, CA 91744, 818/918-8834. 1MB minimum memory; requires external drive. For Mac Plus and SE, *Design Dimensions* \$750, *Solid Dimensions* \$395. For Mac II, *Design Dimensions* \$1395, *Solid Dimensions* \$1295.

Frame Mac

Version 1.11. Erez Anzel Software, 113 McCabe Crescent, Thornhill, Ontario, Canada L4J 2S6, 416/738-4601. 512K minimum memory; 800K drive storage recommended. \$595.

JDL-850 GL+

Japan Digital Laboratory, Inc., 2801 Townsgate Rd. #104, Westlake Village, CA 91361, 805/495-3451. 512K minimum memory. \$3845.

MacDesigner

Version 2.0D. Case, Inc., The Market Place, Manlius, NY 13104, 315/ 682-4000. Key-disk copy protection; installs on hard disk. 1MB minimum memory; requires hard disk. \$2000.

MacDraft

Version 1.2a. Innovative Data Design, Inc., 2280 Bates Ave., Ste. A, Concord, CA 94520, 415/680-6818. 512K minimum memory; external drive recommended. \$269.

MacPlot

Version 3.0. CompServCo., 800 Freedom Ln., Slidell, LA 70458, 504/649-0484, 800/272-5533. 512K minimum memory; requires plotter; 800K drive storage for 512K recommended. Standard Version \$199, Professional Version \$399.

MGMStation CAD

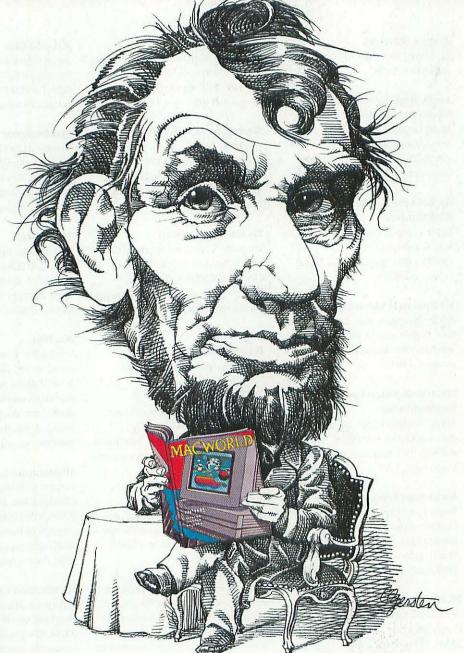
Version 2.09. Micro CAD/CAM, 3230 Overland Ave. #105, Los Angeles, CA 90034, 818/376-6860. Key-disk copy protection; installs on hard disk. 512K minimum memory; requires 800K drive storage. \$795.

MGMStation CAD/CAM

Version 1.5. Micro CAD/CAM, 3230 Overland Ave. #105, Los Angeles, CA 90034, 818/376-6860. Key-disk copy protection; installs on hard disk. 512K minimum memory; requires 800K drive storage. \$7000.

(continues)

Not all reviews are created equal.



Jome reviews are press releases. Some are synopses. Some are just paragraphs or rating symbols that can't possibly tell you enough. MACWORLD gives you in-depth reviews. Comparative. Analytic. Selective. Solutions-

oriented. Precisely the ones you want.

Month after month, our experts work programs thoroughly to give you the information you need to make intelligent, productive choices. MACWORLD, The Macintosh™ Magazine.

MACWORLD GIVES YOU MORE.



SUBSCRIBE NOW! SAVE \$23.40 OFF THE ANNUAL COVER PRICE

Limited-time offer! Take advantage of Special Savings Call TOLL FREE 800/524-3200 Visa and MasterCard Accepted

More for less. Honest.

YES, send me one year (12 monthly issues) of MACWORLD for only \$24. That's nearly 50% off the annual cover price of \$47.40 and \$6.00 off the regular subscription rate of \$30.00.

SAVE EVEN MORE. ☐ Payment enclosed	□ \$37.90 for 2 years (24 monthly issues) □ Bill me later
NAME	
COMPANY	
TITLE	a wash
ADDRESS	
CITY	STATEZIP

Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

MACWORLD

4BPA

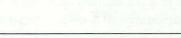
More for less. Honest.

YES, send me one year (12 monthly issues) of MACWORLD for only \$24. That's nearly 50% off the annual cover price of \$47.40 and \$6.00 off the regular subscription rate of \$30.00.

SAVE EVEN MORE. ☐ Payment enclosed	□ \$37.90 for 2 year □ Bill me later	rs (24 monthly issues)
NAME		
COMPANY		
TITLE		H M-
ADDRESS		
CITY	STATE	ZIP

Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

MACWORLD



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld Subscription Department P.O. Box 51666 Boulder, Colorado 80321-1666

Holdhamlladdadhalladhalladladall



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld Subscription Department P.O. Box 51666 Boulder, Colorado 80321-1666 NO POSTAGE NECESSARY IF MAILED IN UNITED STATES

NO POSTAGE NECESSARY IF MAILED IN UNITED STATES



Where to Buy

MiniCad

Version 3.06. Diehl Graphsoft, Inc., 8370 Court Ave. #202, Ellicott City, MD 21043. 301/461-9488. Key-disk copy protection, 512K minimum memory; requires 800K drive storage; Mac Plus and hard disk recommended. \$495.

MSC/pal

Version 1.95. The MacNeal-Schwendler Corp., 815 Colorado Blvd., Los Angeles, CA 90041, 213/259-3888, 800/336-4858. 1MB minimum memory; requires external drive; hard disk recommended. \$1495.

ncCAD/ncCAM

ncCAD 1.13, ncCAM 2.05. Gibbs and Associates, 9311 Eton, Chatsworth, CA 91311, 818/700-8854, 800/ 654-9399. 512KE minimum memory; requires external drive; Mac Plus and hard disk recommended. ncCAD \$1575, ncCAM \$2075, \$3650 for both.

PowerDraw

Version 1.0. Computer Shoppe, P.O. Box 18344, Greensboro, NC 27419, 919/299-4843. Key-disk copy protection. 1MB minimum memory; requires external drive; hard disk recommended, \$595.

ReadySetGo

Version 4.0. Letraset USA, 40 Eisenhower Dr., Paramus, NI 07653. 201/845-6100, 800/526-9073. 512K minimum memory; requires external drive for 512K; Mac Plus with external drive recommended. \$495.

Snap

Version 2.0. Data Basics, Inc., P.O. Box 32, Sunset, NC 29685, 803/878-7484. 512K minimum memory; external drive recommended. \$695.

Tempo

Version 1.2. Affinity Microsystems, Ltd., 1050 Walnut St. #425, Boulder, CO 80302, 303/442-4840, 800/ 367-6771. 512K minimum memory. \$99.

The CAD/CAM Journal

Koncepts Graphic Images Inc., 16 Beaver St., New York, NY 10004, 212/425-4441. Single-copy price \$5. Subscription \$20 per year (6 issues).

The Shinko Color Printer

Computer Friends, Inc., 14250 N.W. Science Park Dr., Portland, OR 97229, 503/626-2291, 512K minimum memory; requires SuperChroma system for Mac 512K, Mac Plus, or Mac SE; requires parallel interface card for Mac II. CHC335 \$4500, CHC65 \$8990.

VAXDraw

Version 1.4. Telos Corp., 3420 Ocean Park Blvd., Santa Monica, CA 90405, 213/450-2424. 512K minimum memory; Mac Plus and hard disk recommended. \$195.

VersaCAD/Macintosh Edition

Version 1.0. Versacad Corp., 7372 Prince Dr., Huntington Beach, CA 92647, 714/847-9960. 1MB minimum memory; math coprocessor, hard disk, and plotter recommended. \$1995.

Versatec Model 7224 Plotter

Versatec, 2710 Walsh Ave., Santa Clara, CA 95051, 408/988-2800. 512KE minimum memory. Price to be announced.

Pages 104 to 117

The Disk Shopper's Guide to Storage

Amcodyne, Inc., 1301 S. Sunset St., Longmont, CO 80501, 303/665-7200.

Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010.

AST Research, Inc., 2121 Alton Ave., Irvine, CA 92714-4992, 714/553-0340.

Bering Industries, 240 Hacienda, Campbell, CA 95008, 408/379-6900.

CMS Enhancements, Inc., 1372 Valencia Ave., Tustin, CA 92680, 714/259-9555.

Cutting Edge, 115 Apache Dr., Evanston, WY 82930, 800/443-5199.

Ehamn Engineering, 115 Apache Dr., Evanston, WY 82930, 307/789-3830, 800/257-1666.

(continues)

BRING YOUR MOUSE UP TO SPEED FAST PAD"

Fast Pad's finely textured, low friction surface gives you incredibly quick, pixel by pixel control without annoying skips. Boosts the performance of any mouse, including ones with new teflon bottom. Wipes clean and maintains its finish for years.

Apple® Platinum, Blue and Dark Grey. Apple is a registered trademark of Apple Computer Inc.



MicroStore™ Crafted with Pride in U.S.A. LeSueur, MN 56058 U.S.A. P.O. Box 33 Custom colors & logo imprints available. Prices do not include shipping. ©1987

BOOKSHELF TO BRIEFCASE SAFE, CONVENIENT, EASY-TO-FIND DISK STORAGE



Disk books and Travellers are crafted of stain and static resistant Cordura nylon fabrics, with reinforced edging for durability. Snag-free pocketssecure velcro closure—four popular colors.

FOR FAST DELIVERY CALL NAT. TOLL FREE: 1-800-962-8885 In MN (612) 665-3284

Telex 325853

Master Card, Visa, American Express Accepted

disk-book...

Free-standing design and individual pockets let you view all titles at a glance. Unique top seal keeps disks in-dust out. 10, 16 and 32 disk models. (16 has pockets for manuals, pads and pens.)

Traveller...

Slim, compact traveling companions fit easily in coat pocket or purse. Folding design securely holds and protects disks. 4, 8 and 12 disk models.



Where to Buy

Everex Systems, Inc., 48431 Milmont Dr., Fremont, CA 94538, 415/683-2222, 800/821-0806 ext. 2222, 800/821-0807 ext. 2222.

FWB Software, 2040 Polk St. #215. San Francisco, CA 94109, 415/474-8055.

General Computer Corp., 215 First St., Cambridge, MA 02142, 617/492-5500.

Hard & Soft, Inc., 2005 W. Cypress Creek Rd. #1A, Fort Lauderdale, FL 33309, 305/772-0430.

International Business Network Computers, 1919 E. Romneya #317, Anaheim, CA 92805, 714/635-7825.

Iomega Corp., 1821 W. 4000 South, Roy, UT 84067, 801/778-1000.

Jasmine Technologies, Inc., 555 De Haro St., San Francisco, CA 94107, 415/621-4339.

LaCie, Ltd., 16285 S.W. 85th St. #306, Tigard, OR 97224, 503/684-0143.

Levco, 6160 Lusk Blvd. #C-203, San Diego, CA 92121, 619/457-2011.

LoDown, 10 Victor Sq. #600, Scotts Valley, CA 95066, 408/438-7400.

MacPeak Systems, 1201 Spyglass, Austin, TX 78746, 512/328-0747. 800/225-7509.

MacProducts USA, 9709 Brown Ln., Ste. E, Austin, TX 78754, 512/832-0335, 800/622-3475.

Mass Micro Systems, 3250 Jay St., Santa Clara, CA 95054, 408/988-1200, 800/253-8900.

Micah Storage Systems, Inc., 56 Worral Dr., Newark, DE 19711, 302/731-0430, 800/782-0097.

Microtech International, Inc., 29 Business Park Dr., Branford, CT 06405, 203/488-8993, 800/325-1895.

Mirror Technologies, Inc., 2209 Phelps Rd., Hugo, MN 55038, 612/426-3276.

Northern Telecom, Inc., 100 Phoenix Dr., Ann Arbor, MI 48106. 313/973-4000, 800/521-3278.

NuData Inc., 3206 Scott Blvd., Santa Clara, CA 95054, 408/727-1049, 800/832-8268.

Palo Alto MicroSystems, 369 Christopher Ct., Palo Alto, CA 94306, 415/424-8740.

Peripheral Land, Inc., 47800 Westinghouse Dr., Fremont, CA 94538, 415/657-2211.

Personal Computer Peripherals Corp., 6204 Benjamin Rd., Tampa, FL 33634, 813/884-3092, 800/622-2888.

Priam Systems Division, 20 W. Montague Expwy., San Jose, CA 95134, 408/434-9300.

Primary Data, Inc., 9225 Katy Frwy. #415, Houston, TX 77024, 713/688-8300, 800/338-3544.

ProApp, Inc., 10005 Muirlands, Ste. M, Irvine, CA 92718, 714/855-9088, 800/424-2425.

Racet Computers, Ltd., 3150 E. Birch St., Brea, CA 92621, 714/579-1725.

Relax Technology, Inc., 3101 Whipple Rd. #22, Union City, CA 94587, 415/471-6112, 800/848-1313.

Rely Technologies, Inc., 36 JFK St., Cambridge, MA 02138, 617/661-7395.

Rodime Peripheral Systems Division, 29525 Chagrin Blvd. #214, Pepper Pike, OH 44122, 216/765-8414.

Spectra Micro Development, P.O. Box 41795, Tucson, AZ 85717, 602/884-7402.

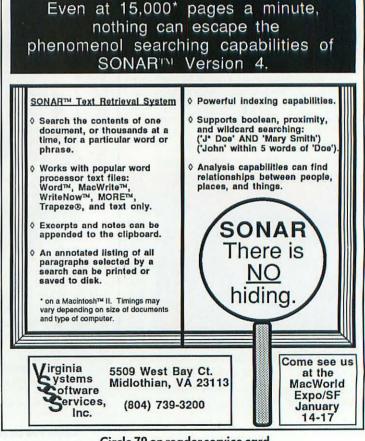
Sunol Systems, Inc., P.O. Box 1777, Pleasanton, CA 94566, 415/484-3322.

SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043, 415/964-8884.

Supra Corp., 1133 Commercial Way, Albany, OR 97321, 503/967-9075.

(continues)





Double Helix® Voted

Best Database of the Year"

MACWORLD Readers Poll, 1987

Double Helix II is Here!



New power, speed, reliability,...

Double Helix II adds so many new capabilities to Double Helix that, like the Macintosh II, it's almost an entirely new product.

Double Helix II gives business professionals the power to create integrated solutions to information management problems. Using words and pictures rather than a complex programming language, Double Helix II is both easy to learn and even fun to use. Time and billing, inventory control, sales tracking, project planning, accounting, and business analysis applications of all types can be rapidly developed. Applications are instantly expandable so that you can share information with other Macintoshes and/or DEC's VAX computers.

Call (800) 323-5423 for information and the Odesta Preferred Dealer nearest you. In Illinois (312) 498-5615

Odesta Corporation

Where to Buy

Warp Nine Engineering, Inc., 1751 W. County Rd. B #107, St. Paul, MN 55113, 612/426-9769, 800/654-5294.

Pages 118 to 123 The Game Hall of Fame Annex

Air Warrior

Available through GEnie. 401 N. Washington St., Rockville, MD 20850, 800/638-9636.

Bureaucracy

Infocom, 125 CambridgePark Dr., Cambridge, MA 02140, 617/576-3190. 512K minimum memory. \$39.95.

Dark Castle

Silicon Beach Software, Inc., P.O. Box 261430, San Diego, CA 92126, 619/ 695-6956. 512K minimum memory; requires 800K drive storage. \$49.95.

Ferrari Grand Prix

Bullseye Software, P.O. Box 7900, Incline Village, NV 89450, 702/831-2523. Not copyable. 512K minimum memory. \$59.95.

Go for the Macintosh

Version 1.02. Infinity Software, Inc., 1144 65th St., Ste. C, Emeryville, CA 94608, 415/420-1551. 512K minimum memory; 512KE recommended. \$39.95.

HardBall

Accolade, Inc., 20813 Steven Creek Blvd., Cupertino, CA 95014, 408/446-5757. Not copyable. 512K minimum memory. \$44.95.

MacGolf

Version 2.0. Practical Computer Applications, Inc., 1305 Jefferson Hwy., Champlin, MN 55316, 612/427-4789. Not copyable. 512K minimum memory. \$59.95.

MacRacquetball

Version 2.0. Practical Computer Applications, Inc., 1305 Jefferson Hwy., Champlin, MN 55316, 612/427-4789. Key-disk copy protection. 1MB minimum memory. \$59.95.

Maze Wars +

Version 2.0. MacroMind, Inc., 1028 W. Wolfram St., Chicago, IL 60657, 312/871-0987. 512K minimum memory; requires AppleTalk network or modem. \$49.95.

NFL Challenge

Version 1.01. Xor Corp., 5421 Opportunity Ct., Minnetonka, MN 55343, 612/938-0005, 800/635-2425. 512K minimum memory. \$99.95.

ShadowGate

Version 70. Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667, 800/221-9884, 800/942-7315 in Illinois. Key-disk copy protection. 512K minimum memory. \$49.95

Smash Hit Racquetball

Version 1.3. Primera Software, 650 Cragmont Ave., Berkeley, CA 94708, 415/525-3000. 512K minimum memory. single-user version \$19.95, multiuser version \$39.95.

Stationfall

Infocom, 125 CambridgePark Dr., Cambridge, MA 02140, 617/576-3190. 128K minimum memory. \$39.95.

Tass Times in Tonetown

Version AID-142. Activision, Inc., 2350 Bayshore Pkwy., Mountain View, CA 94043, 415/960-0410, 800/227-9759. Not copyable. 512K minimum memory. \$34.95.

The Chessmaster 2000

Version 1.02. The Software Toolworks, One Toolworks Plaza, 13557 Ventura Blvd., Sherman Oaks, CA 91423. 818/907-6789. \$44.95, backup disk \$5, hard disk installation option \$10

The Dungeon Revealed (formerly The Dungeon of Doom)

Version 1.0. Woodrose Editions, P.O. Box 2537, Madison, WI 53701, 608/836-9387. 512K minimum memory. \$37.50.

The Fool's Errand

Version 1.1. Miles Computing, Inc., 7741 Alabama Ave. #2, Canoga Park, CA 91304, 818/341-1411. 512K minimum memory; requires external drive for 512K. \$49.95.

(continues)

Before this happens, call SAFEWARE

800/848-3469 (In Obio, call 614/262-0559)

Protects your computer against theft, fire, power surges and other accidental losses. Insures your entire system for as little as \$39 a year — depending on the value of your hardware, software, and media. Full replacement after a low \$50 deductible.

We're SAFEWARE, the first name in computer insurance. Tens of thousands of satisfied customers. Call toll-free for rates or immediate coverage.

SAFEWARE, The Insurance Agency Inc. 2929 N. High Street P.O. Box 02211 Columbus, Ohio 43202





On Compuserve, GO SAF

Circle 693 on reader service card

THE PERFECT \$9 GIFT! · Need a quick gift? We always ship in 24 hours 1-Day air, C.O.D. available · Public Domain and Shareware **Editor's Choices** Featured in MacWorld Magazine Aug. '86 86 Best of PD.—Communications, utilities games, DA's Apr '87 106,119 Fun! ScreenWreckers, savers, prantil Jul. '87 125 Fkeys Manager, Kevstring and selected □ Jul. 87 125 Fkeys Manager Keystring and selected Fkeys. □ Aug. 87 132 Saviour Mac's Headroom, 27 DA's, fonts, demos □ 7 Systems of the selection of the sele Switcher, disk dump 29 Red Ryder, communications with documentation. (Shareware). \$9 131 Packit III—2 RAM disks, Hard Disk b/up (512K only)...... \$9 Business ☐ 76 PageMaker 10—40 templates . . ☐ 135 Best of Business, Home Finance ☐ 163 Dbases:mail, inventory, (prints) . . . Utilities 5 Code Cracking widoc, FEdit 6,89 ResEdit: edit fonts & icons 130 Disk Catalogger—organize disks □ BOOK: 150 pg, directory of disks. \$7.95 □ 1 Yr. Membership: book, quarterly bulletins, plus many discounts. \$20 □ Library: Complete set—195 disks. \$975 CAD/CAM 159 CAD/CAM, Advanced Animation Desk Accessories 102 Best DA's—utils, modem, Transfer 168 Use Fonts, Fkeys, DA's w/o install SPECIAL OFFER! Fonts Any 5 Disks 90 Boston II—laser qlty on Imgwlr. 133 Beverly Hills—Sharpest, Imgwrtr Book + Bulletin Games ONLY \$39.95 (+\$4 S/H) Games 103 Best Games—Billards, Megaroids 126 Star Trek with sound & graphics 129 Float in Zero Gravly, Scarab of RA 134 "Wheel of Fortune": digitized sounds. 136 Casino game—Blackjack, slots, etc. Add \$4 (\$10 foreign) for shipping & handling or \$2 (\$5 frgn) if ordering book only. CA orders add sales tax. __by Check VISA MC Graphics 116,117 Clipboard Art, Slideshow, more Card No _ ☐ 151 Artisto—MacPaint-like DA, more ☐ 161 Talking Head:3-D animation, sound ☐ 178 Movies\ampres of NY, etc(512K only) \$9 \$9 \$9 Name Nudes 49,66 Girls! Adults only pictures Programming Complete Sesame C compiler State ☐ 166 Complete Sesame C compiler . . . ☐ 195 Simple Tools: C language libraries . For free bulletin circle reader service no. 334 THE PUBLIC POMAIN Science 154 Earthplot—draw detailed 3D globes EXCHANGE CALL NOW! 2074C Walsh Ave., Dept. 112 160 TV Startup Sounds, Sound Init. Santa Clara, CA 95050 In CA 408-496-0624

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION REQUIRED BY 39 U.S.C. 3685

- Macworld magazine, Pub. No. 07418647

- 1. Macworld magazine, Pub. No. 07418647
 2. Date of filing: October 10, 1987
 3. Published monthly
 3A. No. of issues published annually: 12
 3B. Annual subscription price: \$30.00
 4. Known office of publication: 501 Second St., San Francisco, CA 94107
 5. Complete mailing address of the headquarters of general business offices of the publisher: PCW COMMUNICATIONS, INC. 501 Second St.,
 San Francisco, CA 94107
 6. The expressed address of the publisher editor and managing agilter are Bublisher: Inpus E. Mari
- San Francisco, CA 94107

 6. The names and address of the publisher, editor and managing editor are Publisher: James E. Martin, PCW COMMUNICATIONS, INC., 501 Second St., San Francisco, CA 94107; Editor: Jerry Borrell, PCW COMMUNICATIONS, INC., 501 Second St., San Francisco, CA 94107; Managing Editor: Charles Barrett, PCW COMMUNICATIONS, INC., 501 Second St., San Francisco, CA 94107

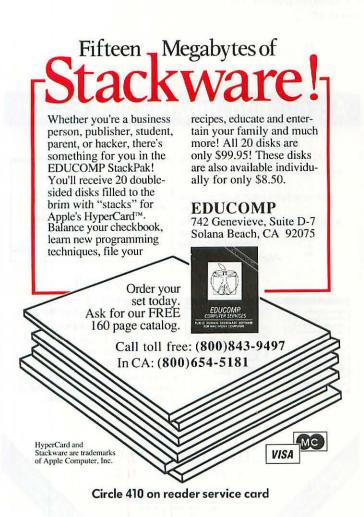
 7. The owner is: CW COMMUNICATIONS, INC., Patrick McGovern, 5 Speen St., Framingham, MA 01701. The names and addresses of stockholders owning or holding 1% or more of the total amount of stock are listed below.
- There are no known bondholders, mortgagees or other security holders owning or holding 1% or more of the total amount of bonds, mortgages or other securities.

10. Extent and nature of circulation Average no. copies each issue during preceding 12 months: A. Total no. copies (net press run), 258,371; B. Paid and/or requested circulation

1. Sales through dealers and carriers, street vendors and counter sales, 47,400; 2. Mail subscription (paid and/or Sales through dealers and carriers, street vendors and counter sales, 47,400; 2. Mail subscription (paid and/or requested it, 139,660; C. Total paid and/or requested circulation (sum of 10E1), 187,060; D. Free distribution by mail, carrier or other means, samples, complimentary, and other free copies, 7,279; E. Total distribution (sum of C and D), 194,339; F. Copies not distributed 1. Office use, left over, unaccounted, spoiled after printing, 22,962; 2. Return from News Agents, 41,070; G. Total (sum of E, F1 and 2-should equal net press run shown in A), 258,371.

Actual no, copies of single issue published nearest to filing date: A. Total no, copies (net press run), 279,950; B. Actual no. copies of single issue published nearest to filing date: A. Iotal no. copies (net press run), 279.90; B. Paid and/or requested circulation 1. Sales through dealers and carriers, street vendors and counter sales, 44,660; 2. Mail subscription (paid and/or requested), 158,748; C. Total paid and/or requested circulation (sum of 10B1 and 10B2), 203,408; D. Free distribution by mail, carrier or other means, samples, complimentary, and other free copies, 3,859; E. Total distribution (sum of C and D), 207,267; F. Copies not distributed; 1. Offlice use, left over, unaccounted for, spoiled after printing, 24,343; 2. Return from News Agents, 48,340; G. Total (sum of E, F1 and 2–should equal net press run shown in A), 279,950.

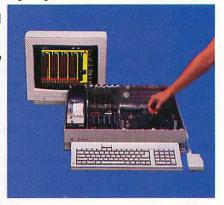
11. I certify that the statements made by me above are correct and complete. James E. Martin, Publisher.



We'd like to help you increase your memory.

ustom Memory Systems, Inc.,

the world's leading supplier of Memory and Storage Sub-Systems for Sun Microsystems, Inc.™ computers is now offering Memory and Storage Sub-Systems for the Macintosh™ family. For your Macintosh, utilizing State-of-the-Art technology, our own SIMM (Single In-line Memory Module) is available in two (2) configurations:



For your Macintosh II:

4 MB expansion using 4-1MB SIMMS

8 MB expansion using 8-1MB SIMMS

For your Mac SE and Mac Plus

4 MB expansion using 4-1 MB SIMMS

2 MB expansion using 2-1 MB SIMMS

All Memory products have a lifetime warranty.



or the entire Macintosh family, a complete array of Storage Sub-Systems are available, ranging from 96 Megabytes (with or without tape back up) to 1.14 Gigabytes of

fast access on-line storage in a single ergonomically designed package. All Storage Sub-Systems come with a Two (2) Year Warranty.

For further information call 408-263-8011



Custom Memory Systems, Inc.

826 N. Hillview Drive Milpitas, CA 95035

(408) 263-8011

Macintosh¹⁴, Mac II¹⁴, Mac SE⁷⁴ and Mac Plus¹⁴ are registered trade marks of Apple Computer, Inc.
Sun Microsystems is a registered trademark of Sun Microsystems, Inc.

Circle 432 on reader service card

253

Where to Buy

Uninvited

Version 60. Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667, 800/221-9884, 800/942-7315 in Illinois. Key-disk copy protection. 512K minimum memory. \$49.95.

Pages 124 to 129 Inside Outliners

Acta

Version 2.0. Symmetry Corp., 761 E. University Dr., Ste. C, Mesa, AZ 85203, 602/844-2199, 800/624-2485. 128K minimum memory; 512K recommended. \$59.95.

MaxThink

Version 2.2C. MaxThink, 230 Crocker Ave., Piedmont, CA 94610, 415/428-0104. 512K minimum memory. \$89.

Microsoft Word

Version 3.01. Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 206/882-8080, 800/426-9400. 512K minimum memory; requires 800K drive storage; Mac Plus with external drive recommended. \$395.

MindWrite

Version 1.1. MindWork Software, 100 Pacific St. #555C, Monterey, CA 93940, 408/375-1531, 800/367-4334. 512KE minimum memory; hard disk recommended. \$295.

More

Version 1.1c. Living Videotext, Inc.. 117 Easy St., Mountain View, CA 94043, 415/964-6300. 512K minimum memory; external drive recommended. \$295.

SideKick

Version 2.0. Borland International, Inc., 4585 Scotts Valley Dr., Scotts Valley, CA 95066, 408/438-8400, 800/255-8008. 512K minimum memory. \$99.95.

ThinkTank 512

Version 1.3. Living Videotext, Inc., 117 Easy St., Mountain View, CA 94043, 415/964-6300. 512K minimum memory; external drive recommended. \$195.

Xtra

Version 2.0. Deneba Software, 7855 N.W. 12th St. #202, Miami, FL 33126, 305/594-6965. 512K minimum memory; requires System 4.1 or higher. \$195.

Page 136

Hello, PhoneNet Calling

PhoneNet Passive Star Wiring Kit

Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331. 128K minimum memory. \$95.*

PhoneNet CheckNet

Version 1.01. Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331. 128K minimum memory. \$29.*

PhoneNet Plus Connector

Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331. 128K minimum memory. \$59.95 per connector.*

PhoneNet Star Controller

Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331. 128K minimum memory. \$1695.*

TrafficWatch

Version 1.05. Farallon Computing, 2150 Kittredge St., Berkeley, CA 95709, 415/849-2331. 512K minimum memory; hard disk recommended. \$195.*

Page 138

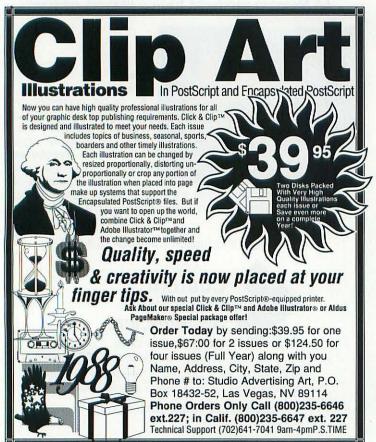
A (Re)Touch of Gray

ImageStudio

Version 1.0. Letraset USA, 40 Eisenhower Dr., Paramus, NJ 07653, 201/845-6100, 800/526-9703. 1MB minimum memory; requires external drive; hard disk recommended. \$495.*

(continues)

Accounting Just Became Easier!



MultiLedger General Ledger plus Accounts Receivable plus Accounts Payable plus Inventory Tracking ... all in one easy-to-leam, easy-to-use program! · Can handle multiple companies each with several departments or profit centers Prior period adjustments, automatic or future journal entries, full-year transaction history, prior year comparisons and budgeting (Modify) (town · Many reports and other features Payroll · A complete payroll system which can be used as a stand-alone program or integrated with MultiLedger Tax calculations for all states and federal · Prints paychecks, W-2's, mailing labels, employee earnings register, payroll verification report, check register, posting summary, and tax summary Can easily handle multiple companies, departments, categories, pay periods, and compensation methods including tips, bonuses and commissions SOFTWARE 1520 E. Mulberry #230 / P.O. Box 860 Fort Collins, Colorado 80522 800-426-2466 ext 338 or 303-484-3541 Dealer Inquiries Welcome Circle 581 on reader service card

Circle 703 on reader service card

uick Start Your Day!

Try PcW Communications' Quick Results VIDEOS The easiest way to put new software to work for you.

From the publishers of PC World, Macworld, Publish! and Macintosh Today, the Quick Results video guides help you get up and running like no other teaching tool available.

In a fast-paced and easy-to-follow tutorial you'll learn the process of

What these

- a guided approach to how the program works
- a solutions-oriented overview of the software's capabilities
- the key concepts that unlock

producing an everyday work product with the software. You'll gain a visual familiarity with the application of the program's features and functions to the task at hand. Whether you're a computer novice or an experienced user adding a new application to your library, there's no better way to get started.

VIDEO guides provide:

the program's potential

- the shortest path from ground zero to a finished work product
- expert insights, tips, and techniques

Ouick Results

VIDEO guides — \$19.95 to 39.95

PageMaker (PC Version X.X, Mac Version X.X) Aldus-

Framework, dBASE III Plus Ashton-Tate-

Borland-Quattro, Paradox

McDraw II, Appleworks

Claris— Living Videotext-

1-2-3, HAL, Symphony, 1-2-3 (Japanese version) Lotus-

Works (PC)

WordStar 4.0 MicroPro-

Harvard Presentation Graphics, Harvard Total Project Manager, First Publisher Software Publishing—

Q&A Symantec-

WordPerfect Corp.— WordPerfect

Microsoft-

Quick Results video guides are available for many other software programs running on IBM and compatibles or the Apple Macintosh. For a complete catalog call 1-800-451-7020 or write to:

紧翼 THE STERLING GROUP QUICK RESULTS VIDEO GUIDES

Box 750

Bristol, RI 02809

Where to Buy

Page 139

Desktop Publishing the Hard Way

MacPublisher III

Version 3.1. Boston Publishing Systems, Inc., 1260 Boylston St., Boston, MA 02215, 617/267-4747, 512K minimum memory; requires external drive for 512K; hard disk and Laser-Writer recommended, \$295.*

Page 141

Vocab Rebab

Smart Words: College Prep Vocabulary

Addison-Wesley Publishing Co., Inc., Jacob Way, Reading, MA 01867, 617/944-3700. 512K minimum memory. \$49.95, additional data disk \$19.95.*

Smart Words: Essential **Business Vocabulary**

Addison-Wesley Publishing Co., Inc., Jacob Way, Reading, MA 01867, 617/ 944-3700, 512K minimum memory. \$49.95, additional data disk \$19.95.*

Page 142

How Not to Meet Women

Leisure Suit Larry in the Land of the Lounge Lizards

Version 1.0. Sierra On-Line, Inc., P.O. Box 485, Coursegold, CA 93614. 209/683-6858, 800/344-7448, 800/624-9505 in California. Key-disk copy protection. 512K minimum memory. \$39.95.*

Page 142

Pace Yourself

Excellerate

Version 1.04. Personal Training Systems, P.O. Box 54240, San Jose, CA 95154, 408/559-8635. 512K minimum memory; requires Microsoft Excel, external drive, and audio cassette player. \$39.95 per module.*

LearnWord

Version 3.01. Personal Training Systems, P.O. Box 54240, San Jose, CA 95154, 408/559-8635. 512K minimum memory; requires Microsoft Word,

external drive, and audio cassette player. \$49.95 per module.*

MasterWorks

Version 1.1. Personal Training Systems, P.O. Box 54240, San Jose, CA 95154, 408/559-8635. 512K minimum memory; requires Microsoft Works. external drive, and audio cassette player. \$49.95 per module.*

PageTutor

Version 2.0. Personal Training Systems, P.O. Box 54240, San Jose, CA 95154, 408/559-8635. 1MB minimum memory; requires PageMaker, external drive, and audio cassette player. \$49.95 per module.*

Page 144

The Finder in a Desk Accessory

DiskTools Plus

Version 1.0. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171, 800/245-4525, 800/562-1112 in California. 512K minimum memory. \$49.95.*

Page 145

Expanding Your Network

MultiTalk

Abaton Technology Corp., 7901 Stoneridge Dr. #500, Pleasanton, CA 94566, 415/463-8822, 512K minimum memory; requires AppleTalk. \$695.*

NetModem V1200

Shiva Corp., 222 Third St. #1200, Cambridge, MA 02142, 617/661-2026, 800/458-3550. 512K minimum memory; requires AppleTalk and communications software. \$599.*

Page 146

Working Software Opens Up

Findswell

Version 1.0b. Working Software, Inc., 321 Alvarado, Ste. H, Monterey, CA 93940, 408/375-2828, 800/331-4321. 800/851-1986 in California, 512K minimum memory. \$49.95.*

(continues)



The fastest, most flexible, PC to Macintosh

connection available.

- Simplicity QuickShare is a single connection, not a network. It's simple to install, easy to use, and reliable.
- Data Transfer Powerful bidirectional transfer software is included. Move formatted text and graphics from any PC program to any Macintosh program.
- Speed Connect over the Macintosh's built-in SCSI interface: 6 times faster than AppleTalk networks, 150 times faster than typical RS-232C.
- Storage Sharing The Macintosh can share PC hard drives, even across a PC network. There's less need for expensive Macintosh drives.

QuickShare is \$465. For a free QuickShare brochure, call or write:

Compatible Systems Corporation 303-444-9532

PO Drawer 17220 Boulder, CO 80308-7220 Telex 249643 QuickShare is a TM of Compatible Systems Corp., Macintosh and AppleTalk of Apple Computer Inc.

FWB introduces:



the hammer driveTM 91 meg MacII internal 155 meg external 300 meg external

16.5 ms average access time. 40,000 hr MTBF. Complete software utility package including Backup, our Hard Disk PartitionTM and UtilTM, Hard Disk Optimizer™, and Hard Disk RecoverTM.

These drives were designed by computer enthusiats only for serious power-users.

DiskTimer II Benchmark 22 23 6. (300 Meg)

Stand-alone tape and removable cartridges available as backup options. For information, contact FWB Inc., 2040 Polk St. Suite 215, San Francisco, CA 94109. 415/474-8055

Hammer drive, Hard Disk Partition, Hard Disk Util- are trademarks of FWB Software, Inc. Macintosh is a trademark licensed by Apple Computer, Inc.

Introducing Design. The first thinking tool for both sides of your brain.

Now there's a powerful graphics and text handling program to help you visualize complex systems.

Design lets you create understandable graphic representations of projects and processes on your Macintosh™ So you can organize quickly, analyze effectively, and communicate clearly.

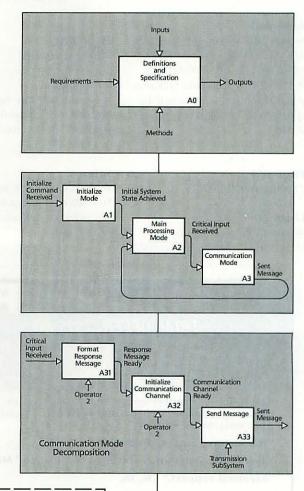
Draw flow charts, organizational charts, computer programs, communication networks, presentation graphics and production line processes—in record time. Once you connect one object to another in a diagram, it stays connected, no matter where you move it. Design makes it easier to establish, maintain

and understand logical relationships.

Build Design diagrams up to 999 pages. And arrange them in hierarchical structure. You can also develop successively detailed descriptions within one multi-level diagram. Or hide detail, so the big picture is easier to see. Even edit, manipulate and stylize text inside any graphic object. And create "hypertext" links to organize text across multiple pages.

What's more, you can always upgrade to Design development systems from Meta Software. Design + DA lets you write Macintosh™ Desk Accessories, mini-applications that extend the power and capabilities of Design. And Design Open Architecture is a programmable system for developing final applications.

That's the verbal description of what Design can do. For a more graphic illustration, look to your right.



Why just draw graphics, when you can draw conclusions? For more information about Design, or for the name of the dealer nearest you, mail this coupon to Meta Software Corporation, 150 CambridgePark Drive, Cambridge, Mass., 02140. If you can't afford to wait, call us at 800-227-4106. In Massachusetts, call 617-576-6920.

Title Company Address State. Meta Software Design is available for the Apple® Macintosh™ 512, 512E, Plus, SE and II at \$250. 150 CambridgePark Drive

Cambridge, MA 02140 617-576-6920

Macworld 12/87

Apple is a registered trademark and Macintosh is a trademark owned by, or licensed to, Apple Computer Inc. © 1987 Meta Software Corp.

Where to Buy

LookUp

Version 1.0a. Working Software, Inc., 321 Alvarado, Ste. H, Monterey, CA 93940, 408/375-2828, 800/331-4321, 800/851-1986 in California. 512K minimum memory. \$74.95.*

QuickLetter

Version 1.0. Working Software, Inc., 321 Alvarado, Ste. H, Monterey, CA 93940, 408/375-2828, 800/331-4321, 800/851-1986 in California. 512K minimum memory. \$129.95.*

Spellswell

Version 2.0c. Working Software, Inc., 321 Alvarado, Ste. H, Monterey, CA 93940, 408/375-2828, 800/331-4321, 800/851-1986 in California. 512K minimum memory. \$74.95; medical dictionary \$99.95; legal dictionary \$99.95.*

Page 148 The Musical Tutor

Listen 2.0

Version 2.1. Resonate, P.O. Box 996, Menlo Park, CA 94026, 415/323-5022. Key-disk copy protection. 128K minimum memory. \$99.*

Page 149

Courseware Construction Set

Course Builder

Version 2.0. TeleRobotics International, Inc., 8410 Oak Ridge Hwy., Knoxville, TN 37931, 615/690-5600. 512K minimum memory; requires 800K drive storage. \$395.*

Page 150

More on Hand

PowerStation

Version 1.1. Software Supply, 590 N. Mathilda Ave., Sunnyvale, CA 94086, 408/749-9311. 512K minimum memory. \$59.95.*

Suitcase

Version 1.0. Software Supply, 590 N. Mathilda Ave., Sunnyvale, CA 94086, 408/749-9311:512K minimum memory. \$59.95.*

Page 151

Mail-Merging Power for MacWrite

MergeWrite

Version 1.0. Software Discoveries, Inc., 137 Krawski Dr., South Windsor, CT 06074, 203/872-1024. 512K minimum memory. \$49.95.*

Page 152

An Environmental Choice

SemperSoft Modula-2

Version 1.0. Semper Software, P.O. Box 225, Glen Ellyn, IL 60138, 312/790-1253. 512K minimum memory; requires external drive. \$195.*

TML Modula-2

Version 1.0. TML Systems, Inc., 4241 Baymeadows Rd., Jacksonville, FL 32217, 904/636-8592. 512K minimum memory; requires MPW and 800K drive storage; Mac Plus with hard disk recommended. \$99.95.*

Pages 219 to 230

Insights On SuperPaint

ResEdit

Version 1.0.1 bundled with *Macintosh Development Utilities* version 1.1.B3 bundled with *MPW*. APDA, 290 S.W. 43rd St., Renton, WA 98055, 206/251-6548. 128K minimum memory; external drive or hard disk recommended. Version 1.0.1 \$25, version 1.1.B3 \$200.

SuperPaint

Version 1.0. Silicon Beach Software, Inc., P.O. Box 261430, San Diego, CA 92126, 619/695-6956. 512K minimum memory. \$149.95.

Pages 235 to 241

Mac System Tools

Apple 1MB Memory Expansion Kit

Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. Requires Mac II. \$349. □

EZTax-PREP™ TRIAL OFFER—\$15.00

The fast, easy, accurate tax preparer for use with Lotus 1-2-3 . Multiplan or Excel.

EZTax-PREP is a comprehensive, professional-level tax preparation package. Toll-free customer support is included free. It has every feature you want:

- "The features leader." Infoworld
- "Everything about (it) . . . inspires confidence." Macazine
- "Excellent support." I.N., IA.
- "One of the user-friendliest programs I have encountered." F.S.B., TX.
- "This is the third year I've used EZTax-PREP and I think it's better than ever." H.G.S., FL.

Try it yourself. For just \$15.00, we'll send you a copy of EZTax-PREP to try out on your '86 returns. That \$15.00 will be credited to the EZTax-PREP package available in January for \$130. (MAC \$99).

To order: Call toll-free. Use VISA, MasterCard or American Express; or send a check for \$15.00 + \$3.00 shipping/handling. (Add 6% sales tax in PA) *Please specify computer and spreadsheet you use.*

After just a few minutes with EZTax-PREP, you'll wonder how you managed without it.



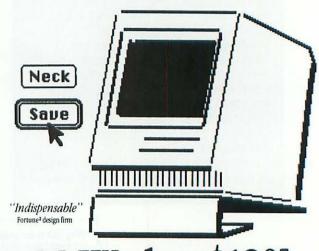
EZWare Corporation Dept. 29 Bala Avenue Bala Cynwyd, PA 19004 800-543-1040 (in PA 215-667-4064)







Circle 168 on reader service card



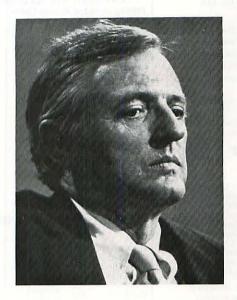
McWedge \$1995

Elevate your mac's position 2"in life and get a whole new slant. Thick, machined, crystal-clear acrylic. Non-slip!



3011 Alvarado Street • San Leandro, CA 94557 • (415) 351-0422 Outside CA call toll free (800) 821-1984 • Sorry no C.O.D's Please add \$2.50 S/H • CA residents add 7% tax • Visa & M/C accepted

DOES WILLIAM F.BUCKLEY, JR. REALLY NEED A THESAURUS?



If you've ever watched his show Firing Line, you know Bill Buckley to be one of the most articulate, erudite people who ever spoke the King's English. His superior vocabulary makes you lean forward in your chair to keep up with him. If anyone could get by without a thesaurus, he could. But we have his letter praising our comprehensive, contemporary Word Finder. No big words, just a nice letter saving how much he liked it and uses it. Didn't mention the 220,000 synonyms for 15,000 words. Didn't say anything about how in just seconds Word Finder performs the whole cycle of look-up and replacement, so you continue writing

without taking your eyes off the screen or your fingers off the keyboard. Nothing about how simple it is—just select the word you want an alternate for, and up pops a window of synonyms. Pick a new word and the window disappears, and your new word takes the place of the old word. But he did say: "It's a bloody miracle. Word Finder has changed my life. I never used to use a thesaurus." * To order call 800-828-6293 (in New York State call 716-377-0130).

Word Finder installs as a desk accessory. It is not copy protected.

Retail \$59.95

*Mr. Buckley volunteered this statement about Word Finder, and is not being compensated for his endorsement. NEW FOR THE MAC®

Special	Introductory	Offer
---------	--------------	-------

Rush me **Word Finder** for \$59.95 (Add \$2.50 shipping: NY residents add sales tax)

☐ Visa ☐ MasterCard ☐	☐ American Express ☐ Check ☐ COD
Card Number	Exp. Date /
Name	PRI REPORT FOR SECTION AND ADDRESS OF THE PRINCIPLE AND ADDRESS OF THE PRI
Phone	THE STREET, ST
Company	rai payraigitaarigi
Address	

State.



Microlytics, Inc., 300 Main Street, Suite 128, East Rochester, NY 14445 (716) 377-0130

(800) 828-6293

Dealers please call

mouter sales

\$1649

319

2249

2899

499

389

185

89

80

80

49

9

199

1049

549

509

149

229

795

1195

\$3149

4399

399 329

390 109

1079

749 799

\$1595

999

2395

1365

1739

699

297

379 1288

1149

2395

1559

1499

HARDWARE

Apple

Macintosh Plus

AST Research AST Mac 86

Central Point

800K Drive

Covercraft

Kensington SystemSaver Mac Turbo Mouse 512/Plus Turbo Mouse MacSE/II

MacTilt/Swivel

MacVision

Mirror

Radius

Accelerator

Printer Muffler 80 Mouse Pocket

MacMemory Inc

MaxPlus - 2MB MaxPlus - 2x4

MaxPlus - 2x4-SE

Magnum 800K Drive

Apple Hardware

Mac II RGB Monitor PC 5.25 Drive Mac II Drive Card

AST Research

E-Machines Big Picture

SuperMac

Radius

MaxPort SCSI/Mac 512K

Accelerator with CoProcessor

Macintosh II w/ext Keyboard Macintosh II 40 w/ext Keyboard

Mac II Video Display Adapt Mac II Video Expansion Kit Mac II Monochrome Monitor

AST Mac 286 AST ICP-2 Comm Processor

AST ICP-4 Comm Processor

Multisync Plus JC-1501

Sigma Designs Laserview 15" Mono(SE/Mac II) Laserview 19" Mono(SE/Mac II)

Multiscan RGB Analog 1302 (II)

SuperView (HiRes MonoCard/SE)

Graphix (HiRes Mono Card/II) 19" Monochrome Monitor

Super Spectrum Color Card 19" Color Monitor

Full Page Display (Mac II)

Full Page (MacPlus/SE/II)

Multisync XL JC-2001

MACINTOSH II

MONITORS

Koala Technologies

AST-PAK 1 MEG/SE

Macintosh External 800K

Apple 3.5 Drive Platinum Macintosh SE w/Keyboard

Macintosh SE20 w/Keyboard

Mouse Pad with Ground Cord **Deluxe Carrying Case**

TurboMax Accelerator 512E/SE

ORDERS ONLY PLEASE . . . TOLL FREE 800-526-5313

-MAJOR CREDIT CARDS ACCEPTED-

• VISA • MASTERCARD • AMERICAN EXPRESS

· OPTIMA · DISCOVER

Macintosh Plus Entry System

System includes:

· Macintosh Plus 1 Megabyte Complete with Keyboard and Mouse

When ordering specify package #8775

• Image Writer II with Cable • Apple 3.5 800K External Drive

• Sony Diskettes Box of 10

· Computer Paper (Package of 500)

· Covercraft Dust Covers for MacPlus and Imagewriter

• Perfect Data Head Cleaning Kit

· Hyper Card Software

NOW ONLY - \$2499

Suggested list price \$3450

SAVE OVER \$900

Suggested list price \$3689,00 Macintosh SE Super System

NOW ONLY \$2749 SAVE OVER \$900

*When ordering

specify package #8776

System includes:

Macintosh SE with 1 Megabyte

 Macintosh Keyboard and Mouse Imagewriter II with cable

Sony Diskettes Box of 10

 Covercraft Dust Cover for Macintosh
 Covercraft Dust Cover for Imagewrit PerfectData Head Cleaning Kit

Hyper Card Software
 Kensington Disk Case

Kensington Mouse Pocket

*When ordering above system with 20 Meg Hard Drive

SE specify package #8777 NOW ONLY

\$3379

Macintosh II Graphic System with 40 Megabyte Hard Disk

Macintosh II Hard Disk 40

Apple Extended Keyboard with Mouse

Macintosh II Video Card

Macintosh II Video Expansion Option
 Apple Color High-Resolution

RBG Monitor

• Imagewriter II with Cable

• Maxell Diskettes Box of 10 • Computer Paper (1600 Sheets)

Covercraft Dust Cover for Mac II and Imagewriter
Perfect Data Head Cleaning Kit

• Hyper Card Software

package #8790

Suggested list price \$7962

NOW ONLY - \$6199

Complete Ready-To-Run systems, no missing parts or cables, we guarantee it! If the systems above do not meet your needs, please call and we will design a system to meet your specific needs.

PRINTERS

Apple Imagewriter II Apple Imagewriter Sheetfeeder \$479 179 1099 Apple Imagewriter LQ Apple Laserwriter Apple Laserwriter Plus 3799 4499 AST TurboLaser PS Brother Dynax-21 399 Orange Grappler MAC 69 QMS PS-800 (LaserConnection) 4095

MONTHLY SPECIALS

PLUS Hard Drives by Rodime Complete with format and utility software! 20 Megabyte SCSI (beige case only!) Formatted capacity 21.3 Megabytes

NOW ONLY \$599

40 Megabyte SCSI (beige case only) Formatted capacity 45.5 Megabytes Average Access Time 28ms

NOW ONLY \$999

Brother HR-15XL Serial Printer 20 CPS Daisy Wheel printer complete with cable, compatible with Microsoft Word 3.0 NOW ONLY \$249

MAILORDER **SINCE 1978** MODEMS AND

WORLDWIDE

COMMUNICATIONS

Pricing includes Modem Cable

a recently incitates mouth Cubic	
Apple	
Apple Personal Modem	\$319
Hayes	
Smartmodem 1200	319
Smartmodem 2400	479
Smartmodem 1200 Mac	
includes Smartcom	399
Prometheus	
Promodem 1200 Expandable	249
Promodem 1200 Non-Exp	179
Promodem 2400 Expandable	349
Promodem 2400 Non-Exp	599
Mac Pac ProCom	39
Mac Pac ProCom	39
Software	
Apple MacTerminal	95
Haves SmartCom II	95
Prometheus ProCom M	39
Modem Cables	
Macintosh 128/512	19
Macintosh Plus/SE/II	19

FTWARE	SCANNERS	
1 1 11 1 1 1 1 1 1 1 1	Abeton	

	CONTRACTOR AND ADDRESS OF TAXABLE		Aveton	
	HyperCard	\$42	Scan Sheet Feeder	\$1649
ı	MacDraw	149	Scan 300	2199
ı	MacPaint	99	AST TuboScan	1599
	MacProject	149	DataCopy	11327
	MacWrite	99	Model 730	1789
١	Switcher	15	Microtek	
١	Word 3.01	239	MS 300A	1993
ı			MS 300C	1319
	Excel	229	MSF 300G	1479
	and the same of th		MSF 300C	1479
	We stock all	titles.	Thunderware	
	A TO STORE THE SECOND		Thunderscan	Lac

Excel	229	MSF 300G	1479
		MSF 300C	1479
We stock a	ll titles.	Thunderware	100
T	TAND	Thunderscan	199
	IARD	DRIVES	
Apple	222		4300.00
Hard Disk			\$1119
Hard Disk	40		1689
Hard Disk	80		2659
AST			DANIES
Fast-20			919
AST 2000 2			1499
AST 4000 7	70 + 60 T	ape	4445
CMS		PORTAGE	
20 Megaby	te MacSt	ack	595
40 Megaby	te MacSt	ack	895
80 Megaby			1335
40 Megabyi	te TapeS	tack	769
140 Megab	yte Subs	ystem	2579
320 Megab	yte Subs	ystem	reterment.
w/Tape (5ms acc	ess)	9799
PCP	122122		29553320
MacBotton	1 20 Meg		849
MacBotton	1 30 Meg		995
MacBotton	i 45 Meg	2 2	1285
MacBotton	1 20 W/M	lodem	1029
MacBotton	1 30 w/N	lodem	1169
MacBotton	1 40 w/N	lodem	1465
MacBotton	1 20S (M	ac512)	875
SuperMac	· · ·		
Dataframe	XP30		849
Dataframe		40 m	1199
Dataframe	XP60 +	40 Tape	1779
Rodime			200
20 Plus			739
45 Plus			1139
Internal H	ard Driv	es	
Apple	00 11 0	D / 11	000
Hard Disk : Hard Disk	20 MacS	E/11	809
Hard Disk			1295
CMS	ou Maci		2190
Pro 20 Mac	II /65m	· V	509
Pro 40 Mac	CE/H (9	Oma	965
Pro 40 Mac	II Front	Mount	965
Pro 60 Mac	HFION	mount	1095
Pro 80 Mac	II (26 p	ne)	1219
Rodime	11 (20 11	13)	1210
20 Plus Ma	cPlus		799
45 Plus Ma			1179
450 RX 45	Meg Mar	SE	1175
1000 RX 10	00 Meg M	lacII	2199
1400 RX 14	0 Meg M	lacII	2579

NO-RISK 30-DAY SATISFACTION GUARANTEE If you're not 100% satisfied with any Hardware or Accessories purchased from CDA Computer Sales, we will refund your purchase price 100% no questions asked! FREE TECHNICAL SUPPORT We support our customers with knowledgable technicians on all products we sell. ORDER VIA TELEPHONE - Toll-Free 800-526-5313, in N.J. 201-728-8080 • ORDER VIA MAIL - Write: CDA Computer Sales P.O. Box 648, West Milford, NJ 07480. Please include full name, address, phone number. • ORDER VIA COMPUSERVE'S ELECTRONIC MALL - 24 hours a day! GO CDA • FREIGHT - UPS ground shipping -add 2% of total order (\$3.50 minimum); AP0/FP0 - add 4% (\$4.50 minimum). Alaska, Hawaii, PR add 6% (\$6.50 min.). Two-Day Delivery. Overnight Delivery and Foreign Orders -Please Call • CUSTOMER SERVICE -201-728-8082 9am-5pm EST. • EXPANDED HOLIDAY HOURS - Nov. & Dec. - Mon.-Fri. 9am-12pm/Sat. 10am-6pm/Sun. 12pm-6pm

Macworld Directory

The Macworld Directory is a comprehensive listing, by category, of products and services available for the Apple Macintosh. It provides advertisers with a low-cost advertising alternative and our readers with an easy reference guide.

FORMAT: The standard format includes a product ID, a 300character descriptive ad, and a company name, address, and telephone number.

Advertisers may choose among categories already in use, or they may create their own. Display advertisers can cross-reference their current ad to the Macworld Directory for increased exposure.

RATES: Listings are accepted for a three-time consecutive insertion at a rate of \$850. We offer a six-time insertion at \$1450 that reflects a 15% frequency discount. Listings must be prepaid (except for established display advertisers) upon submission of ad copy. Checks, money orders, Visa, and Master-Card are accepted.

DEADLINE: For copy deadlines and further information please contact Niki Stranz, your Macworld Directory Account Manager, at 415/546-7722 or 800/435-7766 (800/435-7760 in California). Please send copy and prepayment to the Macworld Directory, 501 Second St., San Francisco, CA 94107.

Accessories

() Bags

Cordura Bag for Mac SE

- · Organize Mac components for easy access, w/padded interior compartments.
- Tough Cordura® & resilient foam padding for protection.
- · Quality material & carefully crafted construction-guaranteed.
- Ask about our ImageWriter II case.
- · Call your local dealer today! For the dealer nearest you, call us or write. Dealer inquiries invited West Ridge Designs, 305 N.W. 12th Ave., Portland, OR 97209, 503/248-0053

O Cables

Mac Lock/Mac Cables

Mac Lock, finest security kit for Mac/+, secures Mac, keyboard, mouse, 2nd drive, modem, & printer. Attractive red vinyl-covered steel 1/16' cables. Lock included. No tools req. \$-back guarantee. Also, IBM, Apple, etc. \$40. Mac Cables provide any length custom cables for Mac/+ (incl. keyboard) or almost any computer need. \$20 & up. Mac Products, 20231 San Gabriel Valley Dr., Walnut, CA 91789, 714/595-4838

○ Hardware

MACOPENER TM

The finest one-piece tool to open the Macintosh case. Do your own upgrades, installations, adjustments, and repairs. No moving parts. One year warranty, parts and workmanship. Suggested list \$19.95 + \$3 shipping and handling. Dealer inquiries welcome.

Central Products Corp., 2211 Norfolk #518, Houston, TX 77098, 713/529-1080

Keypad/Trackball

The Numeric Ease: Upgrade your 512K/128K w/a 22 station, full scale, full function numeric keypad. Includes cursor keys & direct function kevs, such as +, -, \times , \div , & = . List: \$59. The Numeric Turbo: A track ball cursor controller combined w/numeric Ease. List: \$169. Dealer inquiries welcome.

Cambridge Automation, Inc., 20230 State Rd., Cerritos, CA 90701, Orders/Info: 800/345-8666 or 800/826-9214 in CA.

() Mouse

RealClean™/MouseEase™

New! RealClean mouse cleaning kit gets grime off internal rollers. Special tool advances and scrubs rollers. Includes tweezers & cleaning solution. \$14.95 + \$2 s/h. For all Apple mice. From the makers of Mouse-Ease, teflon paws for 512K/ +Plus Apple mice. \$2.95 + .50 s/h. CA res. add sales tax. Send check to: Tacklind Design, 250 Cowper St., Palo Alto, CA 94301, 415/322-2257

O Supplies

LaserWriter Toner Recharge

Don't throw out empty toner cartridges. Sell them to us. Cartridge \$6.50, cleaner \$3, & box + packing \$.50. PRINTERS: Apple LaserWriter, HP & more • COPIERS: Canon PC models . BUY OUR RECHARGED CARTRIDGES \$50, Blu/Brn \$70. We supply empty cartridge & felt cleaner. QC test sheet provided. Support

Michlin Computer Consultants, Inc., Laser Cartridge Division, 3770 Plaza Dr. #1, Ann Arbor, MI 48108, 313/663-9800

Laser Cartridge Recharge!

\$\$\$Save a lot of money recharging laser-printer toner cartridges for Hewlett-Packard LaserJets, Canon, Apple LaserWriter, Corona, QMS. Recharged cartridges are reconditioned to work like new but last 20% longer. Money-back guarantee. Send \$40 per cartridge plus \$3 s/h. Monthly dis-

Toner Technologies/Laser Systems, 7 North Main, P.O. Box 407, Kaysville, UT 84037, 801/544-3090

Diskettes/Fire Protection

Sony 31/2" diskettes: single-sided \$1.53 each, double-sided \$1.93. Unbranded, unboxed, unlabeled. Any quantity, no minimum order. Labels 7¢ ea. Halon fire extinguisher-small desktop size (18 oz.), class IB:C, won't harm computer equipment, \$21.95, Visa/MC/check/MO, Add \$2 s/h. Casablanca Software, P.O. Box 214, Dept. MWA12, Hicksville, OH 43526, 419/542-8145

Recharge Dealerships!!

Hot New Field!! Join our network & make money now. Train at our location. High profit, low overhead. Established company (over 500 retail accounts). Learn it right-no drill & fill! Factory-like recharge method, LONG LIFE'S for only \$59. Receive tools, supplies, trade secrets, marketing strategy & technical support. Free call for information. Laser Charge Co., 11782 Jollyville Rd., Austin, TX 78759, 800/223-8134 or in TX call collect 512/335-8191

Advertising

○ Novelties/Premiums

Create a You-nique® Gift

YOUR logo or artwork on our gifts

 COFFEE MUG \$12.50/6.90*

 MOUSE PAD \$12.50/7.90*

\$12.50/5.90* • T-SHIRT

• CHOCOLATE \$10.50/6.90*

 SWEATSHIRT \$17.50/10.90*

• TRAVEL BAG

\$24.50/15.90*

 AWARD PLAQUE \$24.50/17.90*

*72+ price. \$3.60 for 144 mugs. Quantity pricing available for larger

orders. FREE catalog! Computer Expressions, 3833

Chestnut St., Philadelphia, PA 19104, 215/222-4400

○ *Mailing Lists*

Macintosh Mailing Lists

Macintosh user names & addresses on adhesive labels or as Mac files on diskettes. Over 133,000 names to choose from. Only 5¢ per name for one-time rental. No charge for selecting, sorting, key coding, media, or delivery. Choose any quantity. This extremely high-quality list is updated daily. Ask for our one-time rental agreement before sending payment. Semaphore Corp. 207 Granada Dr., Aptos, CA 95003, 408/688-9200

Macworld Directory

Consulting

Custom Developer

Specializing in integrated systems for legal, medical, sales & corporate mgmt. communities. Macros, templates, custom applications developed using 4th Dimension, Omnis 3+,™ Document Modeler,™ Project Modeler,™ Red Ryder,™ Excel,™ & Tempo.™ Nationwide service through our 24 hr. BBS. Fixed price, T&E, or hourly contract negotiable. Phoenix Support Systems, 3232 San Mateo NE. #199, Albuquerque, NM 87110, 505/765-9666

O Computer Insurance

Safeware

Insure your computer. Safeware provides full replacement of hardware, media, and purchased software. As little as \$39 a year provides comprehensive coverage. With our blanket coverage, no lists of equipment are needed. One phone call does it all! Call 8 a.m. to 10 p.m. EST (Sat. 9 to 5). Safeware, The Insurance Agency Inc., 2929 N. High St., P.O. Box 02211, Columbus, OH 43202, 800/848-3469 (national), 614/262-0559 in Obio

Data Security Insurance

The "all risk" Personal Computer Policy from DSI includes essential coverage not available with other policies: protection against loss of data (even from accidental erasure), loss of custom programs, & fraud. As low as \$35 a year. Coverage can be bound by telephone, 9 to 4 Mountain Time. Data Security Insurance, 4800 Riverbend Rd., P.O. Box 9003, Boulder, CO 80301, 303/442-0900, 800/822-0901

Hardware

Accessories

Mac-cessory™

Everex, the leader of PC add-ons has come to the Macintosh market with their EMAC series of hard drives, tape backup units, and modems.

- EMAC-20D \$579
- EMAC-40D \$995
- \$839 EMAC-60T

I/O Design presents MacLuggage: Mac SE carrying case \$83.95 MacPlus carrying case \$64.95 Valley Computers, 16744 W. Park Circle, Chagrin Falls, OH 44022, 216/543-1952

○ Bar Code

Bar Code/Mag Card Readers

Bar code & mag stripe (credit card) readers for all Macintosh computers, easily connected on the keyboard circuit, requiring no additional program or port; simple but powerful code-39 bar-code printing program for ImageWriter & LaserWriter; magnetic encoder/verifier. GSA pricing avail.

TPS Electronics, 4047 Transport St., Palo Alto, CA 94303, 415/856-6833

O Disk Compatibility

Use Mac Disks on IBM PC

MatchMaker lets you plug any Macintosh external floppy drive into an IBM PC. Half-size card and software lets you copy to/from, view directory, initialize, or delete files on the Mac disk. Works with PCs, XTs, ATs & compatibles. The easy way to move info! \$149. Visa/MC/COD/Checks. Micro Solutions Computer Products, 132 W. Lincoln Huy., DeKalb, IL 60115, 815/756-3411

Transfer Files to IBM

MatchMaker card fits in PC/XT/AT: transfers any Mac file to IBM and back. Simply plug your external Mac drive and MatchMaker into an IBM. \$139 + \$3 s/h.

MatchPoint card fits in PC/XT/AT; transfers Apple DOS, SOS, CP/M and ProDOS files to IBM and back. The IBM must have 51/4" 360K drive. \$185

Blue Heron, 1108 S. Second St., DeKalb, IL 60115, 815/758-2355

○ Hard Disk/SCSI

YOUR MAC SOURCE

Dataframe 30, 60MB SCSI hard disk drive. For all your Mac needs from hard disk drives, software, peripherals, Mac cases, books, networking and consulting. Desktop publishing typesetting and graphic design. Manuals, catalogs, newsletters, & brochures. Call us today! Your Mac Source, 5600 Roswell Prodo North, #264, Atlanta, GA 30342,404/843-2267, 800/367-7552

○ Lisa/Mac XL

MACsimize your Lisa/XL

Dafax provides full service & support for your Lisa/Mac XL. We carry a full line of upgrades, replacement parts & peripherals, including HFS, 20MB replacement hard disks for all Lisas & XLs, RAM upgrades & more. For latest new product information call our toll-free hotline 800/782-7823.

Dafax Processing Corp., 14 North Drive, Malba, NY 11357, 800/323-1751 (orders & info.), 215/574-0357 (PA)

○ Memory Upgrade

Memory Enhancements

Upgrade your Mac to 512K, 1024K, or 2048K of contiguous memory. SCSI port & fans available. Factory flowsolder techniques used for high reliability. 120-day warranty. Local 20minute installation or mail order. Dealer inquiries welcome. Call for pricing and information. Ehman Engineering, 115 Apache Dr., Evanston, WY 82930, 800/257-1666

SIMM MODULES

- Bring your PLUS, SE & Mac II up to max memory. These SIMMS utilize surface mt. technology as chosen by Apple.
- Specs: 1M DRAMS are 120NS, CMOS components selected for cooler operation & greater reliability.
- Also available 256K SIMMS & video RAM upgrades.
- All products unconditionally guaranteed.
- All inquiries welcome CDC Enterprise, 2883 E. LaPalma, Anabeim, CA 92806, 714/630-4633

ONE MEGABYTE SIMMS

Upgrade your Mac Plus, Mac SE, or Mac II by 2 Megabytes for \$575. These SIMM modules are the newest state-of-the-art plug-ins for Macs isted above. Low power eliminates the need for cooling devices. Using surface-mount technology these units should fit most future models for many years. We offer a limited lifetime guarantee against mfg. defects. (Dealers welcome.) Visa/MC

D.M.S. (Data Memory Systems), Box 785, Middleton, MA 01949, 617/683-2325

RAM/ROM Upgrades

- 128K to 512KE
- 128K to Mac Plus

• 512K to Mac Plus All upgrades incl. new Apple ROM/ Drive. Free internal Macintosh fan.

Mac pkg. deal: I used Mac Plus w/internal fan, Seikosha printer, Ehman 800K drive, 6- outlet power strip, disk holder & software \$1700.

 Seikosha printer works w/any Mac & comes w/2-yr. warranty. \$250. Disk Luggage, 5526 Pemberton St., Philadelphia, PA 19143, 215/471-9242 (until 10 pm)

○ Networking

PhoneNET® System

The PhoneNET System creates an AppleTalk network w/convenience, added distance, & flexibility of telephone wire. PhoneNET supports AppleTalk & can use standard telephone cabling, even existing wiring. Components incl: PhoneNET PLUS Connectors, PhoneNET Star-Controller w/StarCommand DA & PhoneNET Manager software, Traffic-Watch network analysis package & PhoneNET CheckNET DA Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704, 415/849-2331

CompuNet Connector

LOW COST-HIGH QUALITY AppleTalk PhoneNet™ compatible network connector. Uses standard telephone wire. No special hardware required for 3000 ft. AppleTalk networks. \$24.95 retail. SCSI Cables 25-50 & 50-50 UL. \$24.95 retail. Dealer inquiries welcome.

Trimar USA Inc., 236 W. 15th St., New York, NY 10011, 800/872-4454, 212/645-7008

Ethernet for the Mac

Kinetics provides Ethernet hardware and software for all Macintosh computers. These products include:

- FastPath: An AppleTalk-Ethernet gateway
- EtherSC: A SCSI-Ethernet controller
- EtherPort SE: An internal Ethernet option card for the Macintosh SE AppleTalk and TCP/IP software is supported. Kinetics, Inc., 2500 Camino Diablo,

Walnut Creek, CA 94596, 415/947-0998

() Peripherals

Sunol Systems Hard Drives

- Sunol offers mass storage ranging from 21 to 245MB.
- SUN*TALK (disk server) increases productivity by sharing files and programs for Mac, Apple II, IIgs, IBM and other computers.
- Expandability, networking and backups are some of our features.
- · High capacity SCSI drives available.
- Prices range from \$1095 up.
 Sunol Systems, Inc., 1177 Quarry
 In., Pleasanton, CA 94566,
 415/484-3322

O Printer Interfaces

Grappler C/Mac/GS

This Universal Parallel Printer Interface makes most popular laser and dot matrix printers perform flaw-lessly with the Mac Plus, SE and II. The Grappler's built-in intelligence allows the printer to emulate Apple's own ImageWriter II, eliminating unreliable drivers and erratic page sizes. Just plug it in and print. It's that easy! Suggested retail: \$99. Orange Micro, Inc., 1400 N. Lakeview Ave., Anaheim, CA 92807 Order: 800/223-8029, in CA 714/779-2772

() Sound

MacRecorder™

MacRecorder records real sound into your Mac. Simple to use. Hold it in your hand & speak into the built-in microphone, or record directly from your TV or stereo. Package incl.: HyperSound™ stackware lets you record & work w/sound from within HyperCard. AudioFile™ records sound, then lets you edit & save file in a variety of formats including HyperCard,™ StudioSession,™ VideoWorks™ & Beep INITS. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704, 415/849-2331

() Video

MacMonitors/Projectors

- Does your Mac need to be seen in the boardroom, classroom, trade show midway? Big-screen (17" to 23"), high res color or monochrome w/anti-glare & vari scan, from \$1,095.
- Projector systems for the ultimate in Mac-impact, from \$3,895. ● Rental MacMonitors & projectors avail.
- Dealer inquiries welcome.
 National Television Systems Co., 2113 Wells Branch Parkway, Suite 6100, Austin, TX78728, 512/251-1392, 800/777-3000

Free! How to Link Video...

From *any* Mac (512K, Plus, SE, II)To large screen MacProjectors → Color or B & W, to 10′ tall!To king-sized MacMonitors → Shows, schools, user groups!To regular TV or VCR for titles → NTSC, VHS, Beta, 8mm, Pro! * Digitize images in PostScript for LaserWriter halftone pictures! *Comtrex, Ltd., P.O. Box 1450, El Toro, CA 92630, free newsletter 800/443-2751 x145, technical questions 714/855-6600*

MIDI

Call 1/800/FOR MIDI

MIDI for everyone! Start your computer/MIDI system today with discount prices & expert help from FUTURE MUSIC. You don't have to be a PRO—most of our customers are just "plain folks" with a home computer and a love of music. Call for FREE CATALOG of Hardware, Software, Synthesizers, 4-tracks and more. All major brands avail. Future Music Inc., 900 W. First St., P.O. Box 1090, Reno, NV 89504, 702/826-6434

■ Services

O Data Conversion

Electronic Data Conversion

Conveniently translate data files from mainframes, minis, dedicated word processors, typesetters, & PCs (word processing embedded codes, database structures & spreadsheet reports & formulas) to Mac or almost any system. Ultimate technology. Nation's leading firms use our invaluable services!

CompuData Translators, Inc., 3325

Wilshire Blvd., #1202, Los Angeles, CA, 213/462-6222, 800/825-8251

Tape/Disk Conversions

Conversion services for your Macintosh, to or from over 800 computer systems:

- Mag tapes
- Microcomputers
- Word Processors
- Typesetters

Our conversion capabilities include to or from 3½-inch, 5½-inch, and 8inch disks & mag tapes. Pivar Computing Services, Inc., 165 Arlington Heights Rd., Dept MC, Buffalo Grove, IL 60089, 312/459-6010

O Desktop Publishing

MacTypeNet™

Mac/PC typesetting. Disk or modem. 300-dot LaserWriter™ output; 635-, 1270-, or 2540-line Linotype™ L300P output. Composition, page makeup, printing/bindery services. Hardware/software sales, services, and support; beginning and advanced training and seminars for Macintosh, PC, and Linotype 100/300 users.

MacTypeNet,™ P.O. Box 52188, Livonia, MI 48152-0188, 313/477-2733

Laser Printing Services

LaserWriter (300-dpi)/Linotype L100 (1270-dpi) output of your Mac/IBM files. Disk or modem. 24 hr. service. Linotype \$5 per page (\$3.50 volume discount). LaserWriter \$.50 per pg. Desktop publishing specialists in consulting & design services. Hardware/software sales. Xerox Ventura Publisher for sale at low price. Full offset printing & bindery services available.

Laser Printing Services, 26058 W. 12-Mile Rd., Southfield, MI 48034, 313/356-1004 (MI), 800/722-3475 (nat'l) Modem: 313/356-3186

Laser Typesetting

Professional-quality file output service at competitive prices. Mac or IBM, via disk or modem to our Laser-Writer or Linotype. Same-day service. We can also keyboard your copy, from a letterhead to a full-length novel. Also available: complete darkroom services and platemaking for your printer. Write or call toll free:

Hodgins Engraving, Box 597, Batavia, NY 14020, 800/354-6500 (Nat.) or 800/626-8900 (NY)

○ Graphics

NYC, Phila., NJ Designers

Desktop publishing doesn't have to look cheap! IBM or Mac files, disk or 24-hr. modem, for high-resolution L300 output through award-winning color printing, binding, & mailing. Impartial system advice, in-depth training, & support for major DTP Mac & IBM pkgs. + PostScript itself. Messenger service! Ask for Kay Downs.

Waldman Graphics, 9100 Pennsauken Hwy., Pennsauken, NJ 08110, 212/925-2420, 215/627-7200, 201/522-8778, 609/662-9111

West Coast Connection!

Upload by disk or 24-hr. modem for 2540-line L300 output, with up to 30 font calls per page. Support all Adobe fonts, Mac & PC software including Ventura, Pagemaker, and most PC word processors. 24-hr. turnaround. Adobe type dealer; beginning and advanced training for Mac, L300 and PC users. Convention service. Lazer Graphix, 314 Las Vegas Blvd., Las Vegas, NV 89101, 800/492-0020, 702/386-2626 (Voice), 702/384-6761 (Fax). (24 br. modem on line)

On-Line Info Service

Telefolders

Telefolders is a national electronic information service for Mac users only. Our software lets your Mac & anyspeed modem access out public data base using only standard icons, windows, & pull-down menus. Browse, upload and download, with just a click of the mouse. No commands to learn, no typing to do. Over one-year old. \$49.95 gets you a complete starter kit, access time included. Semaphore Corp., 207 Granada Dr., Aptos, CA 95003, 408/688-9200

○ Typesetting

Command Typographer®

MAC TYPOGRAPHY. Macintosh/ Quality Typesetting. Command Typographer® features were on minis & mains. Sophisticated multipass H&J provides kerning, formats, tabs, vertical justification, micro justification, automatic leader, letter spacing. \$495. Save \$, copy disk/modem, high-res. typesetting/24 hrs. Typesetting avail.

Regional Typographers/The Software Shop, 229 Bedford Ave., Bellmore, New York 11710, 516/785-4422

Linotronic 300 Service

We are your one-stop service for high-resolution laser typesetting. Open 24 hrs., we offer 1-day turnaround, a 24-hr. modem service, and support for all *Adobe* fonts and programs. Unprecedented customer support and extremely competitive prices.

Ad Graphics, 1350 Ave. of the Americas, New York, NY 10019, 212/245-7300 X133/X259 (NY), 215/386-2208 (PA), 212/582-9174 (modem)

Macworld Directory

Software

○ Accounting

Payroll-General Ledger

CheckMark PAYROLL and AMS GEN-ERAL LEDGER are full-featured accounting programs for \$195 each. PAYROLL calculates all employer and employee taxes. Prints checks and W-2s. User-modifiable tax tables. GENERAL LEDGER has extensive reporting capabilities. Profit centers, budgeting, previous-year balances. CheckMark Software, Inc., P.O. Box 860, Fort Collins, CO 80522, 800/426-2466 ext. 338

Turn-Key Accounting™

4 modules that run w/ Omnis 3+78

- RECEIVABLES/ORDER ENTRY-Back order control; prints invoices, delivery slips, aging anytime
- PAYABLES/PAYROLL—Checks, aging anytime
- INVENTORY-PO's
- · GENERAL LEDGER-Posting can be delayed until convenient. Modules \$195 locked, \$395 unlocked w/commented listing

Software Products Division, 22612 South Avalon Blvd., Carson, CA 90745-4190, 213/835-6077

Grant Cost Accounting

GRANT MANAGER is an accounting program for grants and other research funds. It tracks expenses by grant/cost code, maintains vendor catalogs, and prints orders on your requisition forms. Reconciler balances accounts with university ledgers. Prints vendor history, monthly expense summary, etc. \$425. Niles & Associates, 2200 Powell St., 765M, Emeryville, CA 94608, 415/655-6666

BAKERForms®

Accounting applications for Microsoft Works®. Prints checks, invoices & POs on pre- printed forms. 15 reports give you necessary totals to post to your general ledger. Accounts Receivable, Accounts Payable, Payroll, & Purchasing at \$49.95 ea. All 4 at \$169

Baker Graphics, P.O. Box G-826/ Dept. B, New Bedford, MA 02742, 617/996-6732

Business Accounting

Customize or compromise! S.B.A. Small Business Accounting™ is an integrated, do-it-yourself Omnis 3 Plus application for: receivables, payables, invoicing, purchase orders, inventory, vendors, customers, commissions, and much more. Multi-user. Unlocked & ready to customize. Call for more info.

Working Computer, P.O. Box 86602, San Diego, CA 92138, 619/483-1453

O Apple Emulator

II in a Mac™ new Version

2.5RUN Apple II software on a Mac and still use desk accessories & Cut & Paste to Clipboard. Transfer Apple II disks to the Mac by cable or phone. Use UniDisk directly w/Mac drives. CONVERT Appleworks or any other Apple II data file into standard Mac textfiles. DEVELOP software using Apple II BASIC & ML. Full 65C02 debugging system built in. NOT COPY PROTECTED......\$149.95 Computer:applications Inc., 12813 Lindley Dr., Raleigh, NC 27614, 919/846-1411

O Artificial Intelligence

Instant Expert™

A simple and powerful Expert System Shell designed to be the easiest to use. The powerful inference engine provides an easy-to-use expert system application query. Forward and backward chaining as well as a unique mixed strategy gives real flexibility to users. The system can explain bow and why a conclusion was reached and give the user special Solution information. \$198. Human Intellect Systems, 1670 S. Amphlett Blvd., San Mateo, CA 94402, 415/571-5939

() Astrology

Graphic Astrology

Accurate, easy-to-use GA calculates, displays & prints charts and other data.Basic \$39.50. Advanced \$129.50. Introducing the Gamma Version for \$199.50. Faster, uses more of Mac Toolbox, Multiple Windows, more options & documents. Converts to MacPaint. Support Laser & Mac II. Visa/MC OK. Info. upon request. Time Cycles Research, 27 Dimmock Rd., Waterford, CT, 06385, 203/444-6641

○ Authorship

NEW-Course Builder™

Go from concept to code with no middleman. Create stand-alone applications with user input, graphics, animation, and sound. This visual language provides a next-generation

development environment. Programming is as easy as drawing a flowchart of your thoughts. Send for a brochure, demo on CompuServ. \$395. TeleRobotics™ International, Inc., 8410 Oak Ridge Hwy., Knoxville, TN 37931, 615/690-5600

○ Backup/Restore

HFS Backup™

Back up (archive) data from your hard disk. Back up/restore the entire disk, selective files, or changes only. Includes/excludes files based on name, class, or data modified. Creates backup templates, saves/prints file list (hierarchically by folder or alphabetically by file) \$49.95. (Appleshare version avail. \$149.) MC/Visa or at your dealer. Personal Computer Peripherals Corp., 6204 Benjamin Rd., Tampa, FL 33634, 813/884-3092, 800/622-2888

○ Billing

Automated time-tracking!

TimeMinder™ is an automatic timebilling/productivity analysis program and desk accessory. Operates in the background to eliminate manual timelogs. Also allows for manual entry of time. Includes a variety of search, sort, and printing capabilities. You can describe ea. work session with a 7650 character note. Introductory price \$139 Aatrix Software,™ P.O. Box 5359, Grand Forks, ND 58206, 701/746-7202

○ Business Mgmt.

Advertising Agencies

Clients & Profits ** is a complete job planning, costing, and billing system designed by advertising professionals for advertising agencies. Features estimates, scheduling, client tracking, time sheets, payables, receivables, and more. Multiuser. Customizable too! Satisfaction guaranteed. Working Computer, P.O. Box 86602, San Diego, CA 92138, 619/483-1453

TimeMinder™

is an automatic time billing/productivity tracking program and D/A. It operates in the background, using the clock to eliminate manual timelogs. Fully featured. Allows for manual entry of time, attachment of 255 character note. Includes PauseTime D/A. Price: \$139. Aatrix Software,™ P.O. Box 217 A,

Grand Forks, ND 58206, 701/746-7202

○ Business Planning

Excel Business Toolkits

 Develop Your Business Plan: 200-pg. workbook, 21 tables, 16 graphs, complete instructions: \$69.95 • Financial Forecasting: Workbook, sample pro-forma models, macros, graphs, instructions: \$49.95 • Sales and Market Forecasting: Workbook, sample models, macros, graphs, where to find information: \$49.95

Infoplan, Inc., 155 Forest Ave., Palo Alto, CA 94301, 415/325-3190

O ClipArt

MAC-ART LIBRARY

Illustrate your ideas w/ MAC-ART LIBRARY! 12 disks of professional MacPaint images:

- Animals
- Farm Life
- Geography
- Kitchen
- Sports
- Tools

303/791-2077

- Greeting Cards

Flowers/Trees/

People Transportation

Plants

- Signs/Symbols/
- Buildings Borders Sgl. disks \$39.95. Fulllibrary \$250. Sampler \$49.95. \$3s/h. Otherdisks. CompuCRAFT, P.O. Box 3155, Englewood, CO80155,

Interesting Graphics

Our skilled illustrator has produced 5 collections for your Mac: Horror/ Fantasy #1, Bytes of Fright, DinosaurBytes (natural history), Sky Bytes (aerospace), and Classic Sci Fi. The collections contain a variety of images, each of which is carefully crafted. Each collection is \$29.95 (\$32.05 in CA).

AAH Computer Graphics Productions, Box 4508, Santa Clara, CA 95054, 408/980-7363

ARTWARE Graphics Library

Detailed commercial & presentation graphics created with Adobe Illustrator. Use with programs that import Encap. Postscript files. Pictorial index included. Use as is, or modify with Illustrator, \$69.95 per disk. By subscription \$49.95 per disk. Disk of the month club.

Artware Systems Inc., 3741 Benson Dr., Raleigh, NC 27609 919/872-6511,800/426-3858

JudaicClipArt

DavkaGraphics—91 Jewish symbols and pictures. Also contains Hebrew fonts for MacPaint and Full Paint.
\$34.95. DavkaGraphics II All-newset of Judaic clipart. \$34.95. To order, call toll free 800/621-8227. Major credit cards accepted. For FREE catalog of Hebrew/Judaic software for Mac, call orwrite:

Davka Corporation, 845 North Michigan Ave., Ste. 843, Chicago, IL 60601, 312/944-4070.

○ Communications

Mac2624: HP CRT Emulator

Lets your Mac emulate the HP2624, HP2392, and HP2394, reliably running all HP3000 software. Implements HP modes, parameters, keyboard features, and display characteristics within the Mac's mouse/menu/%-key environment. Ultrafast file transfer (with text and graphics conversion options) included \$199.

Tymlabs Corp., 211 E. Seventh St.,

Austin, TX 78701, 512/478-0611,

pcLINK**

Telex 755820

A complete Macintosh interconnect solution for VAX (VMS and ULTRIX) and UNIX systems. Provides terminal emulation (VT241, VT220, VT100), file-transfer, virtual-disk, and printserver functionality. Supports serial line, remote modem, AppleTalk, Ethernet, or Omninet communications media.

Pacer Software, Inc., 7911 Herschel Ave., #402, La Jolla, CA 92037, 619/454-0565

Contact™

Burroughs emulation. Contact software emulates TD/MT/ET terminals. Sophisticated data capture—all screen data can be used by spreadsheet, database, word processor....CANDE & XMODEM file transfer. Fully à la Mac interface. Soft keys, multiple pages & addresses, password protection...Soon: full file-transfer capabilities, Sperry terminal emulation.

Avenue Software, Inc., 1173 W. Charest Blvd., Quebec, QC, Canada G1N 2C9, 418/682-3088

O Custom Programs

4D™ & HyperCard

MacSolutions Invoices™ is point-of-sale invoicing software for small business
 Lenders Construction Services™ is software for construction lenders & contractors for job costing & analysis
 Plant Encyclopedia™ is stackware for nurseries & landscape architects. Demos available. Also CMS & DataFrame HD's from \$599 & \$749. Visa/MC.
 MacSolutions, 241 12th St., Del Mar, CA 92014, 619/481-0479

O Database Mgmt.

DB Master® for the Mac

Special introductory offer: \$59.95. Easy to learn and use. Database manager ideal for first-time user. Store, organize, retrieve & print info. High capacity, powerful, flexible, not copy protected. 30-day \$-back guarantee. Call now or send check/MO/Visa/MC \$59.95 + \$5 s/h to: Stone Edge Technologies, Inc., P.O. Box 200, Maple Glen, PA 19002,

O Data Acquisition

MacPacq

215/641-1825

The MacPacq transforms the Macintosh into a digitial oscilloscope, chart recorder & waveform generator. A complete data acquisition & control system. 8 channel A/D, 8 digital I/O, programmable gain, 64K RAM. Optically isolated, line or nicad powered. Runs remote and/or connected to Mac. Comprehensive software interface provides for powerful & flexible system. \$995 complete. Biopac Systems, 42 Aero Camino #215, Goleta, CA 93117, 805/968-8880

O Desktop Engineering

Parameter Manager Plus "

Designed for people who need to manage, analyze & graph time, date, or sample- based data. No macros or templates are needed to produce trend plots, strip charts, histograms, forecasts, parametric plots, statistics, correlation, and financial high-low charts. Plot up to 32,000 data points, 96" x 48" in size. Text import & "Calculated Parameters" \$395. Complete Demo \$10. MC/Visa.

Rebus Development Corp., 651 River Oaks Parkway, San Jose, CA 95134, 408/263-2207. Orders 800/654-5147, 800/ 247-4994 (CA)

O Desktop Presentations

Color 35mm Slides

Carousel Color Slide Software ™ lets you create 256-color 35mm slides from *MacDraw* files. Use graphics from many other *MacDraw* compatible programs. Transfer slide files by modem to a professional imaging center. 2K resolution slides only \$7 each. Slides in 24hrs-free delivery. Call for free samples. 20/20 Data Systems, 7000 Cameron Rd., Austin, TX 512/454-2508

O Desktop Publishing

Interactive PostScript

Program Postscript™ interactively over AppleTalk using the PostHaste™ integrated programming environment. Full-featured editor, separate error-message capture window, & fast uploader with no file size limit. Great for the beginner, essential for the serious PostScript programmer! \$59.95.

Micro Dynamics, Ltd., Dept. W, 8555 Sixteenth St., #802, Silver Spring, MD 20910, 800/634-7638 or 301/589-6300

MacPalette

by Microspot prints multicolored graphics & text from most Macintosh software using the Imagewriter II. MacPalette will colorprint documents from MacDraw, MacDraft, MiniCad, MacProject, MacWrite, JAZZ, Microsoft Chart, Word, Excel etc. (not MacPaint.) It prints black as a true black instead of mixing a black. \$69.

CompServCo, 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484

QUED/M* Macro Editor

Powerful text editor/database manager. Many convenience editing features: e.g., unlimited undos. Find files with key words, find/replace with wildcard characters, type or record macros, count lines, words, sentences, etc., extract any data from text files. Search through unopened files, etc. \$119.

Paragon Concepts, Inc., 4954 Sun Valley Rd., Del Mar, CA 92014, 619/481-1477, 800/922-2993 (Nat'l.)

() Educational

Gradebook/Test Generator

MICROGRADE—flexible course & grading, 400 students/100 assignments per class, prints stats & various reports. Ideal for any grade level. MICROTEST II—create, update, generate, & store exam materials. Easy question entry, large database, multiple test versions. Demo \$5. FREE EDUCATIONAL CATALOG. Chariot Software Group, 3659 India St. #MD1, San Diego, CA 92103, 619/298-0202

Brainchild Grade™

Unique graphic interface, like paper grade book, extremely easy to use. Total integration of spreadsheet, database, & report-generating software. Free-form class structure, enormous capacity, & speed! Complete stats & graph program. Intricately detailed user's manual. Value-priced at \$25. No other program comes close! Brainchild Corp., avail. through the Kinko's Academic Courseware Exchange. To order, call 800/235-6919, 800/292-6640 in California

Best Testing System!

LXR•TEST brings desktop publishing to test generation! Combining graphics, word processing, and database management; LXR•TEST enables you to produce tests easier and better than ever—We guarantee it! See why LXR•TEST has been proclaimed the "best educational testing tool on the market!"

Logic eXtension Resources, 9651-C Business Center Dr., Rancho Cucamonga, CA 91730-4537, 714/980-0046

MacKids™

The Learning Edge
Alphabetizer Lemonade Stand
Naval Battle ClockWorks
BodyWorks WordSearch
CoinWorks FlashWorks
Preschool 1 Preschool 2
Early Elementary 1 EarthWorks
Each title \$39.95 MC/Visa/Chk. Write
or call for a free catalog.
Nordic Software, Inc. 3939 North

48th St., Lincoln, NE 68504.

800/228-0417, 402/466-6502

MacANATOMY

A complete electronic atlas of human anatomy in *MacPaint* document form. The drawings may be modified and merged into *MacWrite* documents using the Clipboard. Comprised of four volumes, available singly or as a collection. *MacMedic Publications, Inc., 5805*

Westheimer, Houston, TX 77057, 713/977-2655

Macworld Directory

Kieran

Integrated learning program for children 2-6 yrs. Uses child's name in speech and pictures, Totally mouse driven interactive program with iconic interface. Covers alphabet training, time telling, counting skills, upper-lower case, and mystery door! 4 mice rating in *MacUser*: Great gift! MC/Visa \$39.95.

Ohm Software, 163 Richard Dr., Tiverton, RI 02878, 401/253-9354

Children's Programs

Exceptional graphics, multiple activities & difficulty levels.

- Macrobots (to 5 yrs.) \$49.95
- Animal Kingdom (6-10) Science & language arts \$49.95
- Read-A-Rama (5-9) 2 disks of reading programs \$59.95
- Math Wizard (5-12) 4 games \$49.95
- Fraction Action (8 & up) Talking arcade game & tutorial \$49.95
- Decimal Dungeon (9 & up) \$49.95
- MC/Visa/AE-free catalog Unicorn Software Co., 2950 E., Flamingo Rd. Ste. B, Las Vegas, NV 89121, 702/737-8862

Algebra Homework Tutor

Revolutionary HomeworkTutor™ lets you do your Algebra homework or classwork on a Mac. Checks each step you enter, gives hints, poses practice problems, solves and explains examples, and prints completed homework. Easy editing, standard Mac interface, and too much more to tell. Send for free brochure. Missing Link Software, Box 3280, South Amboy, NJ 08879, 201/721-2569

Flash&Match FLASHCARDS

Create and learn facts from topics like language, chemistry (sub/superscripts), math.
 You select practice/testing methods.
 Save test data for any number of people.
 Fun ani mations reward kids-you can change them! \$49.95 (+CA 6½% tax) includes 1 year current events databases. Call for info.
 InVenture, Inc., 555 DeHaro #330, San Francicso, CA 94107, 415/626-9986

O Educational/Games

WHO AM I?

A challenging and entertaining educational quiz game about the lives of famous people, past and present, from around the world. Billions of different plays to intrigue you. You may even earn yourself a named certificate! Excellent training for TV shows, contests, etc. All ages. 512K min. US \$44.95 Mimics Software, 21 Wood St.,

Mimics Software, 21 Wood St., Eastwood NSW 2122, Australia (61)-2-8683572

○ Engineering

Digital Logic Design Aid

LogiWorks is an interactive digital logic drawing & simulation package for the Macintosh. Features:

- built-in library of common gates, flip-flops, etc.
- user-defined devices, PROMs & PLAs
- adjustable device delays
- 3-state & open-collector devices
- produces timing diagram of selected signals
 \$159.95 (U.S.)
 Pkg. incl. 7400, analog libraries, &
- Pkg. incl. 7400, analog libraries, & net list utility \$199.95
 Capilano Computing, 300-1120
 Hamilton St., Vancouver, B.C.,
 Canada, V6B 252 604/669-6343

Civil & Structural

Fully interactive analysis programs for 2-D frames, trusses, beams: FRAME MAC, BEAM MAC, BEAM MAC II. Structure, shear, moment, deflection diagrams, output text, more. \$145 to \$595. Demo avail. NEW: MacCOGO for geometric & structural properties of shapes: \$145. Money-back guarantee. Traditional COGO coming soon.

Erez Anzel Software, 113 McCabe Cresent, Thornbill, Ontario, Canada 141 286, 416/738-4601

Graphics File Translator

DXF now available! CADMOVER is expanding, tranlations between DXF, IGES, MiniCad, MacDraw, PICT, DI-MENSIONS, and more. Multiple translation paths allow maximum flexibility in your work environment. Creates MSC/pal model definition files. Runs on Mac 512K, Plus, SE and Mac II. \$495.

Kandu Software Corp., P.O. Box 10102, Arlington, VA 22210-1102, 703/532-0213

Microprocessor Devlpmt.

Macintosh-based absolute crossassemblers & editor for MPUs:

- 6800/01/02/03/08/6301/6303
- 6804/HC04 8048/C48/49/50 • 6805/HC05 • 8051/C51/52
- 6809/6309 6502/CO2/C00
- 68HC11 1802/05 Z8
- COP400 Fast, Macros & conditional ass'y, supported. Generates S/Hex

records. US \$99.95 ea. (specify MPU series) + \$4 s/h. Call/write for literature. MC/Visa Check/COD. Micro Dialects, Inc., Dept. MW, P.O. Box 30014, Cincinnati, OH 45230, 513/271-9100

Continuous Beam Analysis

W or w/o overhang at one or both ends. 23 prgs. for concentrated loads & 23 prgs. for distributed loads (lb/ft.). 3 loads/2 supports consecutively thru 25 lds/24 sup. Easy to use—click the icon for number of loads & go. Runtime-interpreter 25 lds/24 sup or compiled 23 lds/22 sup. \$280 either. Mac Plus & external dd drive req'd. Joe Mcgee Consulting Engineer (Regis. P.E.), 1401 NW 105 Terrance, Oklaboma City, OK 73114, 405/751-4275

○ Entertainment

Tired of Arcade Games?

Now-9 real simulations: Rommel's DESERT WAR ● MIDWAY or THE SOLOMONS (carrier actions)

● BARBARIAN in Rome's West or EA-GLES in the East ● WESTERN CAM-PAIGNS or ARMY OF NORTHERN VIRGINIA (Civil War) ● NORWEG-IAN SEA or U.S. invasion in RED STARS (US/Soviet clashes). Great for solitaire. \$34.95 ea. game or \$64.95 for 2. Req. 512K+. SJP Enterprises, P.O. Box 246, McHe-

○ Financial

MacMoney™

nry, IL 60050

Gain control of your finances with this record keeper & financial planner designed for the Macintosh™ with your needs in mind. Easy transaction entry. Print checks, multiple reports, & graphs. Transfer data to a text file for extra benefits from Excel™ or other programs. Introductory price \$74.95 + s/h. Req. 512K. Survivor Software Ltd., 11222 La Cienega Blvd. #450, Inglewood, CA 90304, 213/410-9527

○ Financial Planning

Masterpiece™

A comprehensive Financial Planning System developed by CFPs to cover all areas of financial concern and practice management for financial planners, stockbrokers, & CPAs. Completely integrates *Omnis 3* & *Microsoft Excel*. Entirely updated to the current tax laws. \$3,500. Multi-user and demo versions avail. *Strategic Planning Systems*, 15233 *Ventura Blvd.*, #708, Sberman Oaks, CA 91403, 818/784-6863

○ Fonts

Downloadable Laser Fonts

Specialized fonts for the LaserWriter. Classical Greek \$85. Serif/sans serif for scientific texts \$75. Font of 100 chemical structures \$125 (with scientific text fonts \$160). Polish serif or sans serif \$85 each (4 styles). Serif small caps \$40. Regular or Polish (4 styles). Modern Greek \$85. MC/Visa. As mentioned in Feb. '87 issue. Allotype Typographics, 1600 Packard Rd. #5, Ann Arbor, MI 48104, 313/663-1989

FONTagenix & LASERgenix

FONTagenix:™ 4 volumes of dotmatrix display fonts \$29.50 each vol. (all 4 \$99.50) FOREIGN FONTS EDI-TION:™ 22 foreign language fonts on disk, \$49.50. LASERgenix™: Downloadable laser fonts, text, extended Cyrillic & new bold fonts. \$32.50 each. (Add \$3 s/h, CA res. add 6%. Write for samples or order at: Devonian International Software, P.O. Box 2351, Montclair, CA 91763, 714/621-0973

Free PostScript Font

LaserFonts, the world's largest Post-Script font library. 32 font families and growing. ITC fonts. Rated four mice by *MacUser*. For a free, fullfunction font, send blank disk and business size envelope with 764 postage. Catalog with full-page samples, \$2. Call or write for free info.

Century Software, Inc., 2483 Hearst Ave., #175, Berkeley, CA 94709, 415/549-1901, 213/829-4436

Beverly Hills 1.5

Major upgrade to what grateful users are calling "the best ImageWriter" font on the market!" Hi-Q output in 11 sizes (including new 6-, 7-, 8-, and 11-pt.); larger 36-/72-pt. character set for newer Macs, leading/spacing in 2-/1- pixel steps, lines, 72 fractions, expanded manuals. Blank disc, plus \$5 US (\$5.33 in CA) registered users; or \$15 US (\$15.98 in CA) new users! ADH Software, P.O. Box 67129, Los Angeles, CA 90067-0129

O Genealogy

MacGene™ (version 2.5)

60% faster & 100% complete. Designed specifically for the Mac. Integrated programs for data entry, search, select, list & charting. Incl: History, Hints, Mail-List, Family Tree, Statistics, Launch.

- LDS compatible
 Mac's & Mac-XL
- Extensive Notes User Fields
- Custom Reports Import/Export
- No copy protect
 80 pg. manual
- \$-back guarantee \$145. Demo \$25, Applied Ideas, Inc., P.O. Box 3225, Manbattan Beach, CA 90266, Order/ free info: 213/545-2996

Family Heritage File

Most powerful genealogy program on the Mac. Licensed version of *Personal Ancestral File*, ™ produced by the LDS Church.

- Mac user interface
 Supports all Macs & hard disks except 128K Mac
- Exports data to word processors/ databases/modems
- Reports: Pedigree, Family Group, Individuals, Marriages, Surnames, Documentation, etc., \$149 + \$3 s/h (Utah res. +6%). Demo \$7. Star*Com Software Systems, Windsor Park East, 25 West 1480 North, Orem, UT 84057, 801/225-1480

FAMILY ROOTS™

Do it YOUR way! Huge variety and capacity for your family history. Makes pedigree charts and indices. Phased releases will add group sheets, searches and much, much more. Standard Mac screens/mouse. Free brochure and sample printouts. Satisfaction guaranteed. Currently \$72.50, add \$22.50 per each new release (total \$185) MC/Visa/AE. Quincept, Box 216, Lexington, MA 02173, 617/641-2930

○ Graphics

MacPerspective™

Allows architects, draftspeople, and artists to rapidly construct perspective drawings of houses, buildings, or other objects. Viewpoint can easily be changed. Drawings can be printer in any size up to 100 inches. Easy to learn and use. Fast, professional program with many features, thorough manual. \$179.

B. Knick Drafting, 313 Marlin Pl., Melbourne Beach, FL 32951, 305/727-8071

MGMStation-Prof. CAD

by Micro CAD/CAM, Inc. is a high powered CAD program for the Mac similar to AutoCAD. MGM boasts over 140 powerful functions including: x-y coordinate input, polar or digital data input, 100 power zoom accurate to 4 decimals, tangent drawing tools and much more! \$799.

Demo disk and/or VCR tape avail.

CompServCo, 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484

Perspective Drawing

GridMaker: Dersective grid construction set. Create a variety of 3-dimensional grids that can be used within MacDraw or MacDraft as a guide for perspective drawing. Grid shape, dimensions, line density, rotation, and perspective are independently controlled. Switcher compatible \$49. Visa/MC.

Folkstone Design Inc., P.O. Box 44, Grantham's Landing, B.C., Canada VON IXD, 604/886-4502

MiniCad 3.0

by Diehl Graphsoft boasts 1000+
power zoom, symbol library, 40
layers, auto-dimensioning, doubleline tool, clip/add/intersect polygons
tools, object snap, fillet & trim-lines
tools, object sizer & locator, 9 decimals accuracy, full 2-D & 3-D modes,
etc. It reads MacDraw & MacDraft
files. \$495. Demo avail.

CompServCo., 800 Freedom, Slidell,
LA 70458, 800/272-5533 or
504/649-0484

MacPlot & MacCAD

MacPlot by Microspot is a powerful plotter driver that will plot any object-oriented graphics produced on the Mac in up to 30 colors/pens. MacPlot supports over 50 plots, MacCAD is a series of 12 separate architectural & engineering template symbol libraries for use with MacDraw, MacDraft, MiniCad, etc. CompServCo, 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484

GraphPack Plot Library

Appends to a Microsoft FORTRAN program to generate charts/graphs. Includes industry standard calls

(plot, line, axis, etc.) and 3D hiddenline routines. Direct interface to clipboard and printers (e.g. LaserWriter) for high-quality output. Graphs can be edited in *MacDraw*. Source code included, \$69.95.

Lipa Software, 165 Harcross Rd., Woodside, CA 94062, 415/366-0547

GraphPainter™

Already proven in industry and university use! Does scatter, line, area, bar, column, overlays, log, semilog, multiaxis, multiseries & more. You control scaling, grids, markers, patterns, etc. Finish with the paint tools & 7 curve fits, Full I/O of data & graphics, undo & manual, 512K+ req. \$50.

Greg Brasel, P.O. Box 4274, Chesterfield, MO 63006, 314/256-3317

MapMaker Business Map

Uses boundary definitions to draw maps to required size. Includes U.S. by state and county, world by country, and census data. Assigns data, unique pattern/color to each region. Can combine areas into custom regions. Import/export data (e.g. Excel™) and graphics (Paint or PICT). Print on LaserWriter or in color on ImageWriter II. Color display on Macintosh II. \$295.00

Select Micro Systems, Inc., 40 Triangle Center #211, Yorktown Heights, NY 10598, 914/245-4670

Sizer & Adjacency

MacDraw DAs add CAD power (\$69 w/installer. See 3/87 Macworld):

- Size any object by typing in dimensions, accurate to 0.0001 or 1/64" in architectural scale. Uses *MacDraw's* rulers. Copy and paste values for easy labeling.
- Adjacency forces objects together at near sides so edges are coincident. Johnson & Johnson Design/Build, 677 Grove St., Newton, MA 02162, 617/253-5965

() Health

Nutritional Software

Take steps to eat more sensibly. Analyze diets for nutritional content (calories, sodium, etc.) *Nutri-Calc Plus*[™] includes 32 nutrients, 1700+ foods (3000 avail.). Offers RDA Comparison, tracks histories, energy analysis. \$225. *Nutri-Calc*[™] analyzes 8 nutrients, 900+ foods. Plots progress, analyzes recipes. \$95. Both have brand name & fast foods, NCP. *CAMDE Corp.*, 4435 S. Rural Rd., #331, Tempe, AZ 85282, 602/821-2310

O HyperCard Stackware

Business Info Stacks

Find help & information on state incorporation, licenses, taxes, company start-up, business planning etc. Just \$9.95 for Small Business Guide HyperCard stacks listing state and federal government publications & other sources.

Call for additional stacks, business workbooks, Excel templates, etc. Business Library Software, 720 S. Hillview Dr., Milpitas, CA 95035,800/228-2275 (Nat.), 800/221-4089 (CA)

HyperFacts™

Realize the full potential of your HyperCard with the *HyperFacts* line of products! Making a speech? Consult *Jokes On File*. ™ Search full text or index field. Who supplies that Macintosh product you need? *MacVendors*™ knows! Not copy protected. \$19.95 each + \$2 s/h. Visa/MC. Free catalog.

Casablanca Software, P.O. Box 214, Dept MWB12, Hicksville, OH 43526, 419/542-8145

MacRecorder™

MacRecorder records real sound into your Mac. Simple to use. Just hold it in your hand & speak into built-in microphone, or record directly from your TV or stereo. Pkg. incl: HyperSound™ stackware lets you record & work w/sound from within HyperCard. AudioFile™ software records sound, then lets you edit & save files in a variety of formats including HyperCard, StudioSession,™ & Beep INITS. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704, 415/849-2331

\bigcirc Imports

Japanese Software

E/G Word (Ergosoft Inc.) is a Japanese word processor; can turn romaji sentences into kana & kanji. \$399. Req. 512K. Also:
E/G Bridges \$249. JAM (A & A Co. Ltd.) Input Japanese in major Mac application software, \$149.

- Japanese Clip-Art Vol. 1 & 2, \$79.95 ea.
- Mac Calligraphy simulates medium of ink & brush on paper \$149.95. (Enzan Hoshigumi Co.)
 Qualitas Trading Co., 6907 Norfolk Rd., Berkeley, CA 94705, 415/848-8080

Macworld Directory

() Investment

Profits!

Powerful, very fast, very flexible, new program allows you to pick winning trades, avoid the losing trades. Charting tools include stochastics, MACD, moving averages, RSI, and much more. For the stock, commodities, or options investor broker. \$495. Orders & info requests only to 800/628-2828 ext. 403. Button-down Software, P.O. Box 19493, San Diego, CA 92119,

The Right Time System

The Stock, Index & Futures programs generate accurate Buy/Sell signals for individual stocks, indexes and commodities. The software was developed by an expert portfolio manager for his own personal use & is now available for any smart trader who wants to make quick profits. Call or write for free info.

T.B.S.P. Inc., 2265 Westwood Blvd. #793, Los Angeles, CA 90064, 213/312-0154

○ Languages

FORTRAN + Mac Interface

McFace Tools 3.0 provides Fortran programs with Mac interface by modifying only three lines of code. Includes full DA, file, & edit menus and multiple windows. Source code included McFace. sub 3.0, allows further flexibility picture editing, alerts, dialogs, & more without a toolbox call. Tools \$119, sub \$40. Both \$149.

Tensor Laboratories, P.O. Box 9723, Stanford, CA 94305, 707/763-7873

LISP Development System

MacScheme + Toolsmith™ has what you want for fast and easy interactive development: • Native code compiler

- Stand-alone applications
- Easy-to-use window & menu objects
- · Multitasking & interrupts
- A standard LISP dialect: Scheme 1 RAM, \$395. Interpreted Mac-Scheme™ still only \$125. (Req. 512K) Semantic Microsystems, Inc., 4470 S.W. Hall St., #340, Beaverton, OR 97005, 503/643-4539

() Market Research

MaCATITM

Computer Assisted Telephone Inter viewing pkg. Survey/market research, political polling/telemarketing.

- Auto dialing
- · Handles skip patterns
- Call records/appts.
- Statistics
- · Networks interviews
- 500 questions/2yrs. in devlpmt. \$795 for 2 station pkg. \$200 ea. additional pkg.

PSRC Software, Bowling Green State University, Bowling Green, OH 43403, 419/372-2497

○ Mathematics

PowerMath

Solves problems from simple algebra to complicated calculus expressions. You can differentiate, integrate, plot polynomial expressions, manipulate matrices, solve simultaneous equations, and create custom functions. If you are a student, engineer, or work with math, you'll love the easy-to-use versatility. Retail \$100.

Central Products Corp., 2211

Norfolk #518, Houston, TX 77098,

() Medical

713/529-1080

Medical & Dental Mgmt.

Solo or multipractitioner office includes patient (responsible party) billing, recall, paper/electronic claims, aging, collections, SuperBill, labels, diagnostic history, Word/MacWrite, audit & productivity reports. 24-hr. support. 512K+ hard disk or XL, MacSE & II. Mac Office. Demo from \$100. AMEX/Visa/MC. 2400+ dealers.

CMA Micro Computer, 55888 Yucca Trail, P.O. Box 2080, Yucca Valley, CA 92286-2080, 619/365-9718

FamilyCare™ Software

This medical diagnostic expert system spares expensive, unnecessary trips to a physician by guiding you quickly through possible symptoms and giving specific directions for medical care, home treatment, and medications. Includes hundreds of symptoms, injuries, and diseases of newborns through teenagers. FamilyCare™ Software, 29451 Greenfield Rd., #216, Southfield, MI 48076, 800/426-8426 or 313/559-4561

○ Networking

Connections Newsletter

Provides in-depth information on networking Macs to each other, to PCs, minicomputers, and mainframes. This timely resource contains product reviews, user articles on network planning, and implementation & intros to networks and AppleTalk. If you're thinking of networks, you need Connections! Connections, P.O. Box 5894, Fullerton, CA 92635, 714/738-1492

○ Payroll

Time Saver Payroll™ V.3.0

Start the new year with this complete full-featured payroll system. Payroll System

- Calculates
 Accumulates
- Prints reports
 Salaried, hourly, & comm. wages
 10 deductions, incl. fed. & state taxes
 Tax tables easily edited by user
 Monthly & quarterly reports, incl. 941, FUTA/940, SUTA
 Prints checks and W-2 forms
 Flexible—easy to use! Req. Microsoft Excel \$75 + \$3 s/h. MC/Visa/Chk. Demo \$10 + \$3 s/h.
 Western Software Associates, 110 El Dorado Rd., Walnut Creek, CA 94595, 415/932-3999

A Great Value!

Fully featured Aatrix Payroll provides end-of-payroll, year-to-date, and quarterly summaries. Plus unemployment reports. Check design feature allows use of any payroll check. Capability to update federal tax tables and create state tax tables. Prints W2 statements. \$99.

Aatrix Software,™ P.O. Box 5359, Grand Forks, ND 58206, 701/746-7202

O Printer Drivers

Printer Choice for Mac

MAC DAISY LINK, Manew member of the GDT family, is a single driver that allows any daisy wheel printer or properly interfaced typewriter to be used with any Mac. User configurable (\$82).

THE PRINT-LINK™ continues as the printer-specific family member that supports a variety of dot matrix printers (9 & 24 pin) & ink jet printers. Printers too numerous to list (\$62). Both install using Choser. Mac to printer cable \$22.95, LQ adapter cable \$15.

GDT Softworks, P.O. Box 1865, Point Roberts, WA 98281-1865. Info: 604/291-9121, to order: 800/663-MACC (6222).

O Project Management

AEC Information Manager™

Powerful, easy-to-use projectoriented database designed specifically for the *design* and *construction* industries. Allows project managers to schedule, organize and track: • Correspondence

- Transmittals RFI's Revisions
- Change Orders
 Submittals
- Shop Drawings
 Punch Lists
- Projects. First of its kind!

 AEC Management Systems, Inc.,

 20524 Amethyst I.n., Germantown,

O Programming Tools

MD 20874, 301/428-3694

Programmer's Extender™

Compiled libraries speed up Macintosh application development. Vol 1: windows, menus, text edit, scroll bars, dialogs. Vol 2: list mgr. support, text & graphics printing & I/O, marquee, lasso, zooming, & tiling windows. Avail. for LightspeedC, TML Pascal, & Lightspeed Pascal. \$89.95/volume.

Invention Software Corp., P.O. Box 3168, Ann Arbor, MI 48106, 313/996-8108

Extender GrafPak™

Compiled libraries for creating professional quality graphs in your applications. Line, scatter, bar, column, log, semi-log plots. Customizable tick marks, plot symbols, grid patterns. Multiple curves & patterns. Available for Turbo, Lightspeed, & TML Pascal \$69.95.

Invention Software Corp., P.O. Box 3168, Ann Arbor, MI 48106, 313/996-8108

O Public Domain

PD Software Club

We have the best in proven updated PD software. We scour all the national and local sources for you. Our 50 disks contain only current versions of over 1000 items. \$2 gets you our catalog & a \$2 coupon. \$20 annual membership fee gets you monthly newsletters and 2 FREE disks of fonts and DAs. Monthly disks \$6.95, library disks \$8.95. Visa/MC. Translatum International, 2501-A Parker Lane, Austin, TX 78741, 512/442-0266

Affordable Mac Software

Outstanding collection of public domain software covering all topics for only \$5 per disk. No minimum req. Disks are packed to the brim with the latest software releases. Double sided 800K disks are also available. For free membership, bulletins & a beautifully illustrated catalog, send \$1 to:

MCUS, P.O. Box 6963, Dept. 55, San Jose, CA 95150, 408/723-3388

More Bytes for your Buck!

Choose from our HUGE library of 2500+ programs, games, DAs, fonts, & artwork at only \$3.50 per disk or 3/\$10! No membership fees, no minimums, no gimmicks. Just great software at honest prices. Disks are packed full with the latest releases. Send \$2.50 for disk catalog & 5 free programs! MC/VISA. See display ad this issue!

Budgetbytes,™ P.O. Box 2248, Topeka, KS 66601, 913/271-6022 (for info.), 800/356-3551 (order only)

The Mac Group

The best public domain software & user group services

- PD disks (low as \$2.37 each)
- LifeTime Membership (\$15)
- BigTime Membership (\$72 yr.)
 Includes 2 PD disks monthly
- Roll-Your-Own PD Catalog (\$5)
- Special Art Set (\$50 + \$3 s/h) Includes 12 Clip Art disks. Send \$1 for catalog. Visa/MC The Mac Group, P.O. Box 85152 MB

The Mac Group, P.O. Box 85152 MB 231, San Diego, CA 92138, 619/747-7940

2800+Programs•Tips•Nwsltr

No club has more programs or a better newsletter. Members in 35 countries. 1-time \$8.50 subscription gets you our intro. disk w/13 terrific programs + disk w/description of our HUGE library of over 2800 programs PLUS our quarterly newsletter filled with tips and new programs. Members pay \$7 for any disk (plus \$1 s/h). PD Mac, Dept. 112, P.O. Box 5626, Sberman Oaks, CA 91423

O Real Estate

Property Management

Comprehensive program for managing residential and commercial properties. Many management reports, including operating statement, delinquent rent, lease expiration, and transaction register. Provides check writing, check reconciliation, posting late fees, recurring expenses

\$395. Investment analysis \$245.

Yardi Systems, 930 Laguna St., Santa Barbara, CA 93101, 805/966-3666

Investment Analysis v. 5.1

From RealData, the leader in real estate software. Latest tax reform rules incl. in powerful sensitivity analysis for income property. Detailed 10-yr, report of income, expenses, financing, depreciation, cash flows, tax consequences (incl. passive losses), future value & resale, IRR/FMRR/cash-on-cash/cap. Rate, lease analysis & more. Flexible, easy to use. Req. Excel, ™ Works, ™ or Jazz. ™ \$195. MC/Visa/Amex/COD RealData, Inc., 78 North Main St., South Norwalk, CT 06854, 203/255-2732

Property Management

New version from RealData,³⁸ Inc. Use PM, Level 2, to manage up to 250 residential or commercial tenants. Receipts/disbursement journals, extensive property profiles, receivables and billing, check writing, common charges, individual property financial statements, and more. Easy to use. Req. Excel, ⁵⁴ hard drive. \$295. RealData, Inc. 78 N. Main St., S. Norwalk, CT 06854, 203/255-2732

Income Property Analysis

REMS Investor 1000, 2000, 3000. Multi-year cash-flow analysis using new tax law. Range from REMS Investor 1000 for private investors at \$195, to the 3000 for partnerships, ground leasing, participations, and more at \$795. 100% upgrade credit, 30-day \$\$-back guarantee! No templates. Call to specify free demo disk. REMS Software, 3860 159th Ave. NE #110, Dept. MW2, Redmond, WA 98052, 206/883-7000

Loan Amortization

AmPack is a straightforward loanamortization software package designed by a CPA & tax attorney. Am-Pack supports variable rates, graduated, skipped, & principal-only payments. Also includes balloons, negative amortizations, customized schedules, loan analysis, & more. \$49.50 + \$5 s/h. MCA/isa. Softflair, Inc., 8753 Park View, Milwaukee, WI 53226, 414/778-7200

Property Management

Complete manager's tool for residential & commercial properties. Features include full accounting & budgeting, operating statements, & easy starting balances; Rental, Repair & Tenant Managers; auto. rent increase & late fees; over 40 reports per IREM specs; Personal Investor \$595, Professional \$1,295.

MacLord Systems, Inc., 9487

MacLord Systems, Inc., 9487 Magnolia Ave., Riverside, CA 92503, 714/687-1919

TRACKTM

Multi-user database for tracking clients & prospects; contact history, mail labels & more. Also includes electronic index cards, appointment calendar, auto-dialer, mortgage calculator, expense log, tickler & terminal function. 1 of 8 new products in 1987. \$395.

Softworks, Inc., P.O. Box 2285, Huntington, CT 06484, 203/926-1116

FOR SALE™

Multiuser farming system for increased sales and listings. Maintain database on all property types including property description and owner. Search by any field; mail labels; contact history; & more. Includes appointment calendar, auto-dialer, & tickler functions. Great for market evaluations! \$695.

Softworks, Inc., P.O. Box 2285,

Softworks, Inc., P.O. Box 2285, Huntington, CT 06484, 203/926-1116

LIST

Multiuser property listing system maintains listing info for lease & sale properties including pictures, keeps comparables for CMA's. Search any field. Reports & graphs. Usercustomizable. Like having your own multiple listing system. 1 of 8 new products in 1987, \$795. Softworks, Inc., P.O. Box 2285, Huntington, CT 06484, 203/926-1116

LEAD TM

Multiuser management system for the solicitation of owners selling their own properites. Classify leads. Sales forecasts and YTD reports & graphs. Also includes electronic index cards, auto-dialer, & tickler functions. \$595. Softworks, Inc., P.O. Box 2285, Huntington, CT 06484, 203/926-1116

MacAppraiser™

Easiest and fastest processor on the market. Stand-alone program completes URAR, CONDO and INCOME. Forms excatly duplicated on screen, unfilled areas highlighted, wordwrap, drawing capability for URAR sketch; performs all calculations including sketch area, batch printing; super fast scrolling. Complete URAR in 15-30 min. §395. Bradford and Robbins, 400 East Remington, #B220, Summyvale, CA

() Rental

94087, 408/746-3988

Original MacLibrary, Inc.

Try before you buy...low 16-day rental rates that apply towards purchaseno obligation to buy. We offer a huge selection of Mac software. All the popular programs plus plenty of hard-to-find titles. No fees. Free membership. Special discounts for rapid returns. Plus FREE assistance HOT LINE. Whatever you're looking for, if it was made for the mac, we probably have it ... at LOW RATES. The Original MacLibrary, Inc., 17280 Newbope St. #3, Fountain Valley, CA 92708, 714/957-5767, 800/426-2777 (CA), 800/622-4774(Nat'l)

() Restaurant

Restaurant Management

Total control for any size restaurant. System includes: inventory control, menu management, help screens, documentation, hotline support, \$995. Accounts payable, accounts receivable, restaurant payroll, and general ledger. \$125. Visa/MC Demo \$25. Req. 512E & Omnis3. Dealers invited. Money-back guarantee. *Keller Systems Inc.*, 105 Narcissus St. #310, West Palm Beach, FL 33401, 305/833-3358, 800/458-8430

O Retail

db:\$ Retailer's Advantage™

Turns one or more Macs into cash registers supporting inventory control, receivables, POs. This powerful system compares to others costing 4X. Retailers are different & a whole menu of programs supports the way you do business. Discounting & quantity pricing is supported. Whether you sell durable or apparel items, this can do it for you. System may include a cash drawer, slip printer, ImageWriter & 20MB Mac. Turnkey systems from: db: Solutions, 138 S. Orchard, Vacaville, CA 95688, 707/448-9500 or a db: agent or authorized reseller

CANADIAN MACINTOSH OWNERS!

SaltSpring Software is Canada's National Macintosh software mail order house.

Features:

- Prices approximately 30% below retail
- Canada wide toll free ordering line
- Free shipping via fully insured couriers
- 48 hour delivery to most destinations
- All products new and fully guaranteed
- No custom delays or duties
- No expensive telephone calls or shipping charges
- Large selection of over 300 Macintosh software packages
- VISA and MasterCard accepted Canadian Orders Only

SaltSpring Software Inc

1-800-265-3492 10am to 10pm (EST) Place your order today. Free catalogue available.

Circle 587 on reader service card



DAISY PRINTER DRIVER

- Easy installation via the chooser.
- · Supports sheet feeders 3 bins.
- · Auto proportional word spacing, and micro character adjustment. · Fully justifies text to within 1 pt.
- . Follows the "What you see is what
- you get" philosophy.
- User customizable for stylistic changes ie. bold, underline, italics.
- · Foreign letter characters, or special
- symbols supported.
- · Custom fonts provided for 6 or 8 lines per inch, and user formattable for other fonts on typewriter. · Modem baud rates from 300 to
- 57600 baud. * Supports all applications that follow
- the Mac user interface guidelines

The "PRINT-LINK" continues to be the preferred tool for dot matrix printers.

Contact your Apple dealer or For inquiries: (604) 291-9121 To Order: 800-663-6222

GDT Softworks Inc

Suite D, 2800 Douglas Road, Burnaby B.C. V5C 5B7, Canada

Macintosh™ is a trademark licensed to Apple Computer, Inc. The PRINT-LINK™ & MAC DAISY LINK™ are trademarks of GDT Softworks Inc.

Circle 778 on reader service card

Macworld Directory

○ Sales/Marketing

Market Master for the Mac™

Automatic Sales Inquiry Follow-up! Enter leads whenever you get them and MarketMaster™ contacts the right people the right way at the right time. Prints letters & envelopes, phone lists, scripts, and NEVER FOR-GETS! Easy to learn and use. Frees salespeople to SELL and supports them to SELL MORE! Breakthrough Productions, 10659 Caminito, Cascara, San Diego, CA 92108, 619/281-6174

○ Scientific

Tools for Scientists

Two low-priced products that enhance the usefulness of your Mac. Our Scientific Symbols Fonts disks contain all the characters in IBM's Selectric™ symbols ball and more for \$40. The Spectral Analysis package provides four basic functions: forward and inverse transform, power spectrum and autocorrelation

Probability Distribution, P.O. Box 27276, Austin, TX 78755-2276, 512/338-1250

O Security

Advanced Copy Protection

The leading software manufacturers depend on Softguard copy protection. Introducing our Protection Kit, a complete copy protection system that runs on the Macintosh.

- Stops all copybusters
- FULL HARD DISK support
- No source code changes
- Compatible with all Macintosh systems. Free demo disk. Softguard Systems, Inc., 710 Lakeway #200, Sunnyvale, CA 94086, 408/773-9680

Statistics

CLR ANOVA

Analysis of variance program that can compute up to a 10-way design with repeated measures and unequal n. Marginal means, plots of interactions, simple effects, range tests, contrasts, and more. Full Mac interface. Two data editors provided. Can read text files w/entries separated by spaces, commas, or tabs. \$75 + \$3 s/h.

Clear Lake Reseach, 5615 Morningside #127, Houston, TX 77005, 713/523-7842

RATS! Version 2.1

Best-selling econometrics software program. Now available on the Mac. Multiple regression, including stepwise, 2SLS, logit, probit, and much more! Forecasting with ARIMA, VAR. Exponential smoothing, model simulations, support for daily/weekly data. \$300. Visa/MC. 512K + external

VAR Econometrics, Inc., P.O. Box 1818, Evanston, IL 60204-1818, 312/864-8772, 800/822-8038

O Stock Market

Portfolio/Market Link

- · Stock Portfolio System, a complete portfolio manager, incl. 13 reports, tie to Dow Jones or manual update. Handles diversified investments.
- Market Link, auto fetch up to 120 quotes up to 8 times in unattended mode. Tie to DJ or Source. Bridge quotes to Excel.

Free brochure + 100% rebate offer. Smith Micro Software, Inc., P.O. Box 7137, Huntington Beach, CA 92615, 714/964-0412

Wall Street "Watcher"™

"Watcher" is the state- of-the-art stocks and commodities technical analysis software for the Macintosh user. Features: cycle and trend-line analysis, four graph sizes display any of 15 indicators: stochastics, MACD, moving averages, oscillators, OBV, etc. User friendly. Automatic quote. \$250. Demo disk \$15. Free information.

Micro Trading Software Ltd., 123 Hulda Hill Rd., Wilton, CT 06897, 203/762-7820

○ Word Processors

Expressionist™

An equation editor that generates typeset quality mathematical expressions for any WP or DTP document. Awarded five mice in MacUser review: "It's exactly the equation processor you'd write for yourself... Equation manipulation has never been easier." DA for 512KE thru II. Send \$79.95 + CA tax + \$2.50 to: Allan Bonadio Associates, 1579 Dolores St. #10, San Francisco, CA 94110, 415/282-5864



TAKE CHARGE PEOPLE CHOOSE C.A.T.

C.A.T. — The Powerful, New Relational Database for Managing Contacts, Activities and Time . . . Without Programming.

Successful business people hard-pressed to keep on top of their ever-growing list of contacts are finding C.A.T. is their most powerful and valuable personal productivity tool.

Just as success breeds success, so does success increasingly expand your contact network. And the more contacts you make, the more balls you must juggle at one time.

But C.A.T. puts you in control. It lets you categorize and group your contacts in an orderly manner reflecting the way you work and think. So you can manage them in more meaningful ways — and keep all the balls in the air at one time.

Before the amazing C.A.T. you could only design forms with a simple program that was unlikely to keep up with your future needs. Or you could program your own solutions — with much difficulty — using some rigid database.

But C.A.T. now lets you manage your contacts the common sense way — without programming.

Yet the sophisticated C.A.T. is so flexible it can be adapted to any business and so versatile it can be used in hundreds of ways, for example:

- Managing projects like new product introductions, promotions and meetings — C.A.T. tracks the status and details of each project.
- Doing mailings like invitations, form letters, newsletters and labels — C.A.T. files every mailing to each contact, activity and time.
- Recording day-to-day events C.A.T. tracks trip planning, expense reporting, client

management, personnel records, information requests, etc., etc., etc.

Take charge ... with C.A.T. It lets you manage the quality as well as the quantity of information about your contacts.

C.A.T. is brought to you by Chang Labs, developer of the popular *Rags to Riches* integrated accounting system and applauded throughout the computer industry for our presale services and post-sales support.

Our team of business consultants is ready to answer your C.A.T. questions anytime — even before your make your choice. Give us a call at our toll-free number, describe your business and let our expert consultants match the right solution to your needs. Then any authorized Apple or C.A.T. dealer will help you put our suggestions to work.

800-972-8800

(in California Only: 800-831-8080)

Or send us your business card, and we'll mail you our free 6-page brochure.

Chang Laboratories, Inc.

5300 Stevens Creek San Jose, CA 95129 408-246-8020

C.A.T. and Rags to Riches are trademarks of Chang Laboratories, Inc.

Product Index

Reader Service Number Reader Service Number Reader Service Number Reader Service Number CMS, 195 119 La Cie, 38406 Mirror Technologies, 23C Languages/Development Systems 657 Software Conner Peripherals, 167 FWB, 256 611 Coral Software, 228 Palantir, 163 Business 775 Utilities Jasmine, 18-19 747 212 ABA, 215 625 Software Ventures, 16 CasadyWare, 52 757 112 Jasmine, 181 593 Abacus Concepts, 30 704 3Com, 161 761 Deneba, 197 Jasmine, 242 Abaton, 24-25 Deneba, 208 La Cie, 38 119 Ann Arbor, 58-59 Fifth Generation System, 201 Educational Mass Microsystems, 62-63 Ashton Tate, 154-155 1st Aid, 42 Bible Research Systems, 165 352 Micah, 162 Check Mark Software, 254 595 Greene, Inc., 52 NuData, 185 Open Mac Systems, 173 Supermac, 22, 72, 178 Telecom Software Review, 243 Design Science, Inc., 244 New American Library, 226 736 776 Compatible Systems, 256 119 La Cie, 38 773 718 Cricket Software, 54-55, 65 Macropac, 245 Software Supply, 23D Periscope, 23F 653 784 Data Tailor, 176 662 407 Resonate, 243 Design Science, Inc., 244 606 Software Supply, 23F 415 Scorpio, 160 439 Warp Nine, 29 Educomp, 253 Target Software, 156-157 Infosphere, 230 Graphics/Desktop Publishing Turner Hall Publishing, 200 Miscellaneous 598 Letraset, 8-9 Abacus Concepts, 30 Ann Arbor, 58-59 Virginia Systems, 250 622 Abaton, 24-25 Anco Electronics, Inc., 182 Best Computer Supplies, 74 Computer Friends, 214 GDT Softworks, 270 652 Letraset, 211 204 278 Miscellaneous Living Videotext, 10 CasadyWare, 52 757 Budgetbytes, 250 601 Lundeen & Associates, 217 Data Tailor, 176 301 662 271 Check Mark Software, 254 781 MacroMind, Inc., 76 634 Diehl GraphSoft, 180 581 778 Compuserve, 183 653 Macropac, 245 Educomp, 253 330 691 Linotype Company, 205 410 Educomp, 253 Meca, 213 MSC Technology, Inc., 68 702 GW Instruments, 182 397 Meta Software, 257 168 EZWARE Corp., 258 675 Greene, Inc., 52 Megagraphics, 64 609 Micro Planning, 229 GDT Softworks, 270 409 Image Club, 212 MicroTech Int'l., Inc., 232 Microsoft, IFC, 114-15, 187-189, 594 Incline Printing, 42 720 Laser Connection, 31 614 National Computer Assoc., 47 202-203 Laser Connection, 33 614 National Computer Assoc., 47 Precision Data Products, 47 742 Migent, 21 Laser Connection, 35 784 Periscope, 23F 767 Sun Remarketing, 273 618 Public Domain Exchange, The, 252 Nashoba, 168 334 Letraset, 8-9 Tap Fabrication, 258 Northedge Software, 43 Odesta, 251 559 Resonate, 243 652 Letraset, 211 704 3Com. 161 SL Graves Co., Inc., 231 13 Microsoft, IFC, 114-15, 187-189, Satori Software, 70 Satori Software, 70 Accessories 625 Software Ventures, 16 Scorpio, 160 Migent, 21 405 Solutions, Intl., 238 Telecom Software Review, 243 Personal Computer Peripherals 223 Floppy Disks/Holders Spectrum Digital Systems, 56-57 731 Bede Tech, 174 Statsoft, 216 Public Domain Exchange, The, 252 Silicon Beach, 175, 177 Software Compliment, 216 Hardware 562 Diskette Connection, 196 Supermac, 22,72,178 266 Maxell Corporation of America, 26 Think Technology, 7 789 Printers Sony Corp., 78 591 Value Line, Inc., 221 Software Supply, 23D AST Research, Inc., 46 407 40 Word Perfect, 23G-23H Miscellaneous 703 Studio Advertsing Art, 254 General Computer, 23, 23A-23B Supermac, 22,72,178 399 Advanced Concept Research, 241 Vertical Personal Business/Home Anthro Corp., 20 581 Check Mark Software, 254 604 CE Software, 80-81 Boards Designer Products, Inc., 160 Satori Software, 70 Compatible Systems, 256 676 Ergotron, 163 Entertainment Custom Memory Systems, 253 432 I/O Design, 184 Data Management 530 Budgetbytes, 250 Levco, 179 493 Inmac, 165 592 206 Acius, 158 Incline Printing, 42 National Semiconductor, 66 196 Ashton Tate, 154-155 Chang Labs, 271 762 lames River Corp., 207 797 Migent, 21 Radius, 13 577 Ke-Lor, 244 263 Periscope, 23F 3Com, 161 GE Information Services, 190 Kensington Microware Ltd., 199 Practical Computer Kensington Microware Ltd., C4 Macropac, 245 653 Applications, Inc., 23E Digitizers/Scanners Nashoba, 168 Linebacker, Inc., 236 632 Resonate, 243 176 Thunderware, 234 786 Micro Store, 249 418 Scorpio, 160 Word Processing Display Safeware, 252 Silicon Beach, 175, 177 266 Adobe Systems, 40-41 678 Computer Friends, 214 Viking Technologies, 5 Spectrum Holobyte, 240 47 Ann Arbor, 58-59 204 E-Machines, 44-45 XOR, 172 146 Design Science, Inc., 244 606 Megagraphics, 64 265 XOR, 186 Mail Order Microlytics, 259 Moniterm, 169 XOR. 198 Microsoft, IFC, 114-15, 187-189, 366 Network Specialties, 164 XOR, 210 Best Computer Supplies, 74 202-203 Sigma Designs, 246 795 CDA, 260 Migent, 21 Computer Mail Order, 192-193 Modems T/Maker, C3 Computer Friends, 214 272 Icon Review, 60-61, OUTSERT Word Perfect, 23G-23H Hayes Microcomputer, 170 MacConnection, 130-135 Communications 450 MacProducts USA, 194 Hard Disks/Storage 622 Programs Plus, 48-51 Safeware, 252 Abaton, 24-25 194 Amcad, 204 Compatible Systems, 256 693 776 Bering, 6 627 DCA, 36-37 587 Saltspring Software, 270 Software Library, 166 Dataviz, 34 249 Infosphere, 230 769 Telecom Software Review, 243 398 Telemart, 237 Tussey, 227

Free Product Information Service

The Macintosh"Magazine

Get more information on products you're interested insimply return one of these cards today. There's no cost. And no obligation.

1. Your primary job function: a. Corporate or general manager

- b. Department manager
- MIS or micro manager
- d. Engineering or scientific
- e. Professional
- f. Reseller/VAR g. Self-employed
- h. Other

2. Number of employees in

- your company:
- 4. 500-999 5. 1000 or more
- 26-99
- 3. 100-499
- 3. Plan to buy:
- a. Now
- b. In 4-6 months c. In 7-12 months
- d. More than 12 months from now e. For reference only
- 4. For how many personal computers do you buy products? (Include both company
- and personal units, please.)
 - 3. 5-9 4. 10 or more
- How many of the above are
- Macintoshes?
 - d. 10 or more

Valid through 3/15/88

It's easy to get more information on products advertised in Macworld. Here's how:

- Print or type your name and address and circle the appropriate answer to each question.
- · Circle the numbers that correspond to the reader service numbers for the products that interest you. These numbers appear in the ads and in the Advertiser Index
- · Apply first-class postage before mailing.

301 302 303 304 305 306 307 308 309 310 311 312 14 15 16 17 18 19 20 21 22 26 27 28 29 30 31 32 33 34 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 327 328 339 340 341 342 343 343 344 345 347 348 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 38 39 40 41 42 43 44 45 46 50 51 52 53 54 55 56 57 58 62 63 64 65 66 67 68 69 70 74 75 76 77 78 79 80 81 82 83 84 86 87 88 89 90 91 92 93 94 95 96 365 386 387 388 389 390 391 392 393 393 393 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 277 278 279 280 281 282 283 284 285 286 287 288 577 578 579 580 581 582 583 584 585 586 587 588 289 290 291 292 293 294 295 296 297 298 299 300 589 590 591 592 593 594 595 596 597 598 599 600

Please print or type all information

City, State, Zip (zip code needed to ensure delivery)

Phone: Area code/Number

601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 999

PLEASE NOTE: This card is for your convenience in obtaining information on products advertised in Macworld. Please send editorial comments or inquiries to The Editor, Macworld, 501 Second St. #600, San Francisco, CA

December 1987

Circle number 999 to subscribe to Macworld. We will bill you \$30 for a 1-year (12-issue) subscription (U.S. only).

Free Product-Information Service

The Macintosh" Magazine

Get more information on products you're interested insimply return one of these cards today. There's no cost. And no obligation.

1. Your primary job function: a. Corporate or general manager

- b. Department manager
- MIS or micro manager
- Engineering or scientific Professional
- Reseller/VAR
- Self-employed
- h. Other

Number of employees in

your company:

- 500-999 25 or fewer 26-99 1000 or more
- 100-499
- 3. Plan to buy:
- d. More than 12 In 4-6 months months from now In 7-12 months e. For reference only
- 4. For how many personal computers do you buy prod-
- ucts? (Include both company and personal units, please.)
- 4. 10 or more 5. How many of the above are Macintoshes?
- 5-0 d. 10 or more

- It's easy to get more information on products advertised in Macworld. Here's how:
- Print or type your name and address and circle the appropriate answer to each question.
- · Circle the numbers that correspond to the reader service numbers for the products that interest you. These numbers appear in the ads and in the Advertiser Index

301 302 303 304 305 306 307 308 309 310 311 312

77 578 579 580 581 582 583 584 585 586 587 588

589 590 591 592 593 594 595 596 597 598 599 600

Apply first-class postage before mailing.

289 290 291 292 293 294 295 296 297 298 299 300

2 5 4 5 6 7 8 9 10 11 12
14 15 16 17 18 19 20 21 22 23 24
26 27 28 29 30 31 32 33 34 35 56
38 59 40 41 42 43 44 45 46 47 48
50 51 52 53 54 55 56 57 58 59 60
62 63 64 65 66 67 68 69 70 71 72
74 75 76 77 78 79 80 81 82 83 84
86 87 88 89 90 91 92 93 94 95 96 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 350 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 355 357 358 359 360 361 363 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 97 98 99 100 101 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 433 434 435 436 437 448 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 20" 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 250 251 252 233 234 235 256 237 238 239 240 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 564 564 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 565 566 567 568 569 570 571 572 573 574 575 576 Please print or type all information

(zip code needed to ensure delivery)

681 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 624 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 681 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 741 742 734 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 755 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 999

PLEASE NOTE: This card is for your convenience in obtaining information on products advertised in Macworld. Please send editorial comments or inquiries to The Editor, Mac-world, 501 Second St. #600, San Francisco, CA 52

December 1987

Valid through 3/15/88

Circle number 999 to subscribe to Macworld. We will bill you \$30 for a 1-year (12-issue) subscription (U.S. only).

PLACE FIRST-CLASS POSTAGE HERE. (POST OFFICE WIL NOT DELIVER WITHOLT STAMP.)

MACWORLD

Product Information Service P.O. Box 8260 Boulder, CO 80329-8260

> PLACE FIRST-CLASS POSTAGE HERE. (POST OFFICE WILL NOT DELIVER WITHOUT STAMP.)

MACWORLD

Product Information Service P.O. Box 8260 Boulder, CO 80329-8260

Advertiser Index

Reader Service Number		Reader Service Number	
212	ABA, 215		MacConnection, 130-135
	AST Research, Inc., 46	459	
	Abacus Concepts, 30	781 653	MacroMind, Inc., 76
	Abaton, 24-25 Acius, 158	655	Macrpac, 245 Macworld Expo, 274-275
	Adobe Systems, 40-41	764	
	Advanced Concept Research, 241		Maxell Corporation of America, 26
613	Amcad, 204	702	
	Anco Electronics, Inc., 182		Megagraphics, 64
204	Ann Arbor, 58-59		Meta Software, 257
	Anthro Corp., 20 Ashton Tate, 154-155	352	Micah, 162 Micro Planning, 229
	Bede Tech, 174	774	
	Bering, 6	-	Microsoft, IFC, 114-15, 187-189,
373	Best Computer Supplies, 74		202-203
20		786	Micro Store, 249
301	Budgetbytes, 250	470	MicroTech Int'l., Inc., 232
795 657		742 37	Miles Computing, 222, 223
	CasadyWare, 52	406	Miles Computing, 222, 223 Mirror Technologies, 23C
604	CE Software, 80-81	779	Moniterm, 169
-	Chang Labs, 271	72	Nashoba, 168
581	Check Mark Software, 254	614	AND THE RESIDENCE OF THE PROPERTY OF THE PROPE
134	Comark/USA Flex, 220	196	
776	Compatible Systems, 256	366	Network Specialties, 164
330 271	Compuserve, 183 Computer Friends, 214	773 559	New American Library, 226 Northedge Software, 43
371	Computer Mail Order, 192-193	736	NuData, 185
701	Conner Peripherals, 167	13	Odesta, 251
611	Coral Software, 228	718	Open Mac Systems, 173
684		775	Palantir, 163
432	A COLOREST AND TO A COLOR OF THE PARTY OF TH	784	Periscope, 23F
616	DCA, 36-37 Data Tailor, 176	223	Personal Computer Peripherals Corp., 28
281	Dataviz, 34	211	Practical Computer Applications,
761	Deneba, 197		Inc., 23E
621	Deneba, 208	631	Precision Data Products, 47
634	Diehl GraphSoft, 180	194	Programs Plus, 48-51
606		334	Public Domain Exchange, The, 252
	Diskette Connection, 196 Designer Products, Inc., 160	577 632	Radius, 13
	E-Machines, 44-45	032	Resonate, 243 Sl. Graves, Co., Inc., 231
	Educomp, 253	693	Safeware, 252
	EZWARE Corp., 258	587	Saltspring Software, 270
	Ergotron, 163	1	Satori Software, 70
	FWB, 256	418	Scorpio, 160
512	Fifth Generation System, 201 1st Aid, 42	743 266	Sigma Designs, 246 Silicon Beach, 175, 177
_	GE Information Services, 190	789	Software Compliment, 216
778		629	
791	GW Instruments, 182	407	Software Supply, 23D
143	General Computer, 23, 23A-23B	415	Software Supply, 23F
595	Greene, Inc. 52	625	Software Ventures, 16
257	Hayes Microcomputer, 170	405 210	Solutions, Intl., 238
272 530	Icon Review, 60-61, OUTSERT I/O Design, 184	731	Sony Corp., 78 Spectrum Digital Systems, 56-57
594	Incline Printing, 42	47	Spectrum Holobyte, 240
597	Image Club, 212	225	Statsoft, 216
249	Infosphere, 230	703	Studio Advertsing Art, 254
592	Inmac, 165	618	Sun Remarketing, 273
762	James River Corp., 207	70.4	Supermac, 22, 72, 178
747 112	Jasmine, 18-19 Jasmine, 181	704 769	3 Com, 161
605	Jasmine, 242	709	Telecom Software Review, 243 Tap Fabrication, 258
263	Ke-Lor, 244	659	Target Software, 156-157
78	Kensington Microware Ltd., C4	398	Telemart, 237
11	Kensington Microware Ltd., 199	332	T/Maker, C3
119	La Cie, 38	96	Think Technology, 7
720	Laser Connection, 31	176	Thunderware, 234
706 767	Laser Connection, 33 Laser Connection, 35	524 248	TOPS, 239 Turner Hall Publishing, 200
598	Letraset, 8-9	483	Tussey, 227
652	Letraset, 211	591	Value Line, Inc., 221
493	Levco, 179	70	Virginia Systems, 250
28	Linebacker, Inc., 236	537	Viking Technologies, 5
691	Linotype Company, 205	439	Warp Nine, 29
601	Living Videotext, 10	40 146	Word Perfect, 23G-23H
397	Lundeen & Associates, 217 MSC Technology, Inc., 68	146 265	XOR, 172 XOR, 186
	The state of the s		YOR, 100

68 XOR, 198

Big Screen Small Price.



Apple's⊕ original Lisa™ is now
The Lisa Professional. Run Macintosh™
software on the Lisa Pro as never before! A
larger 12" screen, 800K floppy, a newly developed 20Mb internal hard disk is now available as well as HFS™. Run the most popular Mac business programs on the market for less, hundreds less! Built with all the quality you would expect and a national service center supporting you...just a phone call away.

Five different configurations available with prices starting at *less than one thousand dollars*. New user, a second computer or network file server...an affordable solution. And for a limited time, you buy a qualifying 10Mb or larger system, we'll buy the software...up to \$425 worth*. Choose from a selected list of best sellers.

All systems include hard disks; initialized, loaded and ready to go. Just plug it in, turn it on and get ready to mouse around! It's just that simple.

Call for our Lisa Fact Book for more details. But, you better hurry...only 7,000 are available at these low prices!

*Not all systems qualify. Please call for details

CALL TODAY FOR PRICES AND INFORMATION



Orderline 1-800-821-3221 • Service/Questions 801-752-7631 P.O. Box 4059, Logan, Utah 84321

273

Apple, the Apple Logo. HFS and Macintosh are registered trademarks of Apple Computer, Inc. Lisa is a trademark of Apple Computer, Inc. and used with permission.

Circle 618 on reader service card

Sign up for 60 MACWORLD Expo/ San And save enough

Head for

MACWORLD Expo/
San Francisco
January 15-17
Moscone Center.
And step on it.

Hail the nearest taxi and roll on over to MACWORLD Expo/San Francisco, the original Macintosh computer show.

Test drive an extraordinary array of hardware, software and peripherals firsthand. Weave in and out of traffic. Stop at hundreds of exhibits. Attend dynamic seminars and workshops run by industry experts. Tune up your Macintosh skills. And more.

In three days, under one roof, you'll pick up tips, tricks, techniques, do's, don'ts, how-to's and what's news that would otherwise take weeks to collect. And if you register before December 15, 1987, you'll save \$5. Enough to pay for cab fare.

Keep your hands on the wheel, Mac.

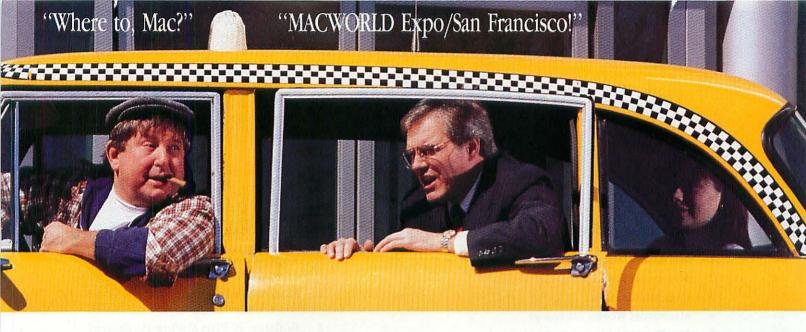
MACWORLD Expo/San Francisco is a hands-on, do-it-yourself show. It's exciting. It's challenging. It's fun. And it's fruitful.

Create professional-quality business graphics — on the spot. Compose your own newsletter, ads and brochures. Try your hand at desktop engineering and design. Send or receive messages from Mac to Mac. Witness the power of the latest Mac programming environments. Do all this and more in just three short days.

There's something for everyone.

It doesn't matter whether you're a seasoned hack or just out for your first drive. After three days, you'll be chock full of information on what Macintosh can help you do. In the office, in the lab, at school or at home.

Our exhibitors list. (As of August 18, 1987.) A who's who of people who design, develop and produce hardware, software and peripherals for Macintosh. 3Com Corp., 5th Generation Software (a/O Touchstone, 800 Software, A.L.P. Systems, Inc., Abaton Technology Corp., Acius, Inc., Addison-Wesley Publishing Co., Adobe Systems, Inc., Advanced Computer Graphics, Advanced Elec. Support Prod., Inc., Birling Microsystems, Ltd., Aldus Corp., AlSoft, Inc., Alssys Corp., Amodome, Inc., Americal Group, Anatex, Ann Arbor Softworks, Apple Computer, Inc., Ashton-Tate, AST Research, Inc., Bering Industries, Inc., Berkeley Macintosh Users Grp. (BMUG), Berkeley Systems Design, Blackhole Technology, Inc., Blowhard Industries, Blyth Software, Bogas Productions, Gordan International, Boston Computer Society, Broderbund Software, Inc., Byte/McGraw-Hill, C.I. Tech International, Inc., Calcomp, Capilano Computing Systems, Ltd., CasadyWare, Inc., CE Software, Centram Systems West, Inc., Checkmark Software, Inc., CLARIS, CMS, Cognition Technology Corp., CompservCo., Computer Cover Co., Computer Expressions, Computer Friends, Inc., Computer Stopper, Computer Stopper, Computer Cover Co., Computer Expressions, Computer Products, Inc., Electron Business Center, Computer Spope, Communications, Inc., DEST Corp., Digital Communications, Inc., Destandance of Corp., Destandance of Corp., Digital Corp., Destandance of Corp., Digital Corp., Destandance of Corp., Digital Corp., Destanda



Francisco by December 15. for cab fare.

There's literally something for everyone — including special programs on computer-aided design, business graphics, communications, desktop publishing, education, programming with Mac and then some.

Taxi, anyone?

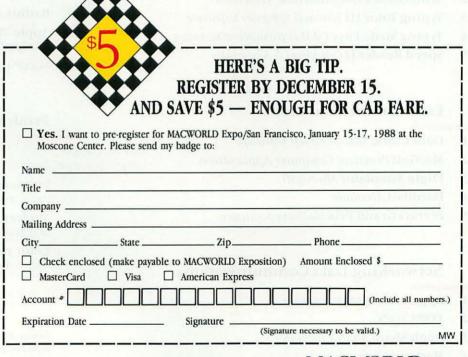
Avoid long lines at the door. Register now for this exciting three-day conference. And save \$5.

Simply fill out the coupon and send it with your check for \$35 (or supply credit card information) to the address listed before December 15, 1987. Onsite conference admission is \$40. And no credit cards or checks will be accepted at Moscone Center.

This low \$35 fee allows you to visit all exhibits and attend all seminars. If you just want to visit the exhibits, admission is \$15, payable only at the door.

To register additional people, just copy this form and complete it for each attendee. For group and student rates, please call 617-329-7466 by December 10. This form must be received by December 15. After that, you must register at the show. All registrations are non-refundable.

Don't miss out on this opportunity to take a free ride. Register now and save \$5.



Send payment and coupon to MACWORLD Expo, P.O. Box 155, Westwood, Massachusetts 02090. Coupon must arrive at our office no later than Tuesday, December 15. For further information, call Mitch Hall Associates at 617-329-7466.

The MACWORLD Exposition is produced by World Expo Co., and managed by Mitch Hall Associates. MACWORLD Exposition is a registered trademark of World Expo Co., Inc.



MACWORLD Exposition is an independent trade show not affiliated with Apple Computer, Inc. APPLE and the APPLE LOGO are registered trademarks and MAC, MACINTOSH, and MACWORLD are trademarks of Apple Computer, Inc.

Macworld Best-Sellers

Months on chart	ф	qu		Months on chart	Ą	1	
nths o	Last month	is month		nthso	Lastmonth	is month	
Mo	Ž	This	Business Software	SN.	Las	This	Hard Disks*
30	1	1	Microsoft Word Microsoft	10	1	1	Apple Hard Disk 20/20SC Apple
22	3	2	Microsoft Excel Microsoft				Computer
18	5	3	PageMaker Aldus	3	3	2	Macintosh Internal 20SC Hard
10	2	4	Microsoft Works Microsoft	4	2	2	Disk Apple Computer
26		5	MacDraw Apple Computer	4		3	Rodime 20 Plus Rodime Peripheral Systems Division
8	4	6	SuperPaint Silicon Beach Software	14	2	4	DataFrame 20 SuperMac Technology
3	6	7	WriteNow for Macintosh T/Maker	2		5	MacBottom 20 Personal Computer
2	9	8	Reflex for the Mac Borland International				Peripberals Corporation
3	8	9	MacMoney Survivor Software				
		10	ReadySetGo Letraset				
							Add-in Boards
			Education Software	1		1	MacSnap Dove Computer
			Education software				Corporation
14	2	1	KidsTime Great Wave Software	1		2	Apple 1MB Memory Expansion
14	1	2	Math Blaster Davidson and Associates				Kit Apple Computer
12	5	3	Typing Tutor III Simon & Schuster Software			3	
3	-	4	Typing Made Easy QED Information Sciences			4	Apple 2MB Memory Expansion Kit Apple Computer
1		5	Speed Reader II Davidson & Associates			5	The second secon
							Max (13 dr.) Since incline
			Entertainment Software				
			Entertainment Software				Product Watch
10	1	1	Dark Castle Silicon Beach Software	Edit	ors' cl	ooice.	
14	3	2	MacGolf Practical Computer Applications	The second second second second	CONTRACTOR AND ADDRESS OF	ALCOHOL: NAME OF THE PARTY OF T	oducts of particular interest.
14	2	3	Flight Simulator Microsoft		The state of the		Jam Session Brøderbund Software
1		4	HardBall Accolade				music/entertainment
3	4	5	Ferrari Grand Prix Bullseye Software				Modern Artist Computer Friends
							Mac II color paint program
							Color printer QMS PostScript thermal printer
			Networking/Data Communications				THEFTHAI PHINCE
14	2	1	AppleTalk Apple Computer		A CONTRACTOR		
10	1	2	TOPS TOPS		A STATE OF THE STA		
6	3	3	AppleShare Apple Computer				Source: Exclusive InfoCorp survey of more
13	4	4	MacServe Infosphere				tban one bundred twenty-five Macintosh retailers and selected mail-order suppliers.
1		5	MicroPhone Software Ventures				Covers sales during August 1987.

^{*}Does not include bard disks installed at the factory.

The Word is Out...

66 Absolutely AMAZING word processing program. I want it WriteNow!

Robert Forras, MacTimes

66 This is the word processor that we designed and built Macintosh for.

Steve Jobs, NeXT Inc. WriteNow feels perfect....
It's hot. Highly recommended. This is THE word processor to use if you use a Mac.

John Dvorak, San Francisco Examiner Right now, WriteNow comes the closest to delivering on the promise of future word processing.

Michael Miller, InfoWorld

Macintosh is a polished word processor that retains the elegance of MacWrite but adds features like multiple windows, footnotes, multiple columns, and a spell checker.

Dan Farber, MacWorld Magazine

66...WriteNow adds up to a great new word processor.
... its ease of use and speed put it way ahead of Microsoft Word and MacWrite for most jobs.

Vicky Jo Varner, The MACazine



Best New Word Processor MacUser Magazine 1986



Performance Word Processing for the Macintosh

To learn more, see your local computer dealer today, or call or write to: T/Maker Company, 1973 Landings Drive, Mountain View, CA 94043 (415) 962-0195

Suggested retail price of WriteNow For Macintosb is \$175. Runs on any Macintosb.

T/Maker is a registered trademark of T/Maker Co. WriteNow is a trademark licensed to T/Maker Co.

Macintosh and MacWrite are trademarks of Apple Computer, Inc.

Circle 332 on reader service card

Pregniter 20 now to Pregnits White North to

T/Maker.



System Saver Mac, \$99.95*



Tilt/Swivel, \$34.95



Mouseway, \$9.95



Anti-Glare Filter, \$49.95*



Printer Stand, \$19.95



Turbo Mouse, reg. or ADB, \$129.95



o, ho, ho! Yes, it's Christmas time again! Time to think about what to give your friends and

family. The old bottle of scotch is out—they've all switched to wine coolers. Fudge is no good either—they're all on the rotation diet. No, it's got to be something really different...

Of course — Maccessories®! (Silly you, why didn't you think of it earlier?) There's something for every Mac user on your list, whether they have an old 512Kor a new Mac II. Better yet, there's something for every budget — from a stocking stuffer like the Mouse Pocket or Mouseway to something more serious like the System Saver® Mac.

For your boss who's always in a hurry—a Turbo Mouse™
For your Mother who's still trying to get just a little peace and quiet—a Printer Muffler™
For your cousin who lives on the wrong side of the tracks—an Apple® Security System.

And how about something for your own Mac—like a Dust Cover to protect it from the office party?

Call (800) 535-4242 for more information. In NY, call (212) 475-5200. Or, write Kensington, 251 Park Ave. S., NY, NY10010.

Of course, if you prefer, you can just send your list to Santa. He's an authorized Kensington dealer. Happy Holidays!





Apple Security System, \$49.95



Disk Pocket, \$9.95



Copy Stand, \$29.95



Printer Muffler 80, \$59.95 Printer Muffler 80 Stand, \$29.95



AppleTalk Clips, \$25.00 for 25



Dust covers, \$9.95 to \$24.95



Mouse Pocket, reg. or ADB, \$9.95



Disk Drive Cleaning Kit, \$29.95